COUNTY OF SAN DIEGO

GUIDELINES FOR DETERMINING SIGNIFICANCE AND REPORT FORMAT AND CONTENT REQUIREMENTS

TRANSPORTATION AND TRAFFIC

LAND USE AND ENVIRONMENT GROUP

Department of Planning and Land Use
Department of Public Works

September 26, 2006

APPROVAL

I hereby certify that these **Guidelines for Determining Significance and Report Format and Content Requirements for Transportation and Traffic** are a part of the County of San Diego, Land Use and Environment Group's Guidelines for Determining Significance and Technical Report Format and Content Requirements and were considered by the Director of Planning and Land Use, in coordination with the Director of Public Works on the 26th day of September, 2006.

GARY PRYOR
Director of Planning and Land Use

JOHN SNYDER
Director of Public Works

Attest: ERIC GIBSON
Deputy Director of Planning and Land Use

I hereby certify that these **Guidelines for Determining Significance and Report Format and Content Requirements for Transportation and Traffic** are a part of the County of San Diego, Land Use and Environment Group's Guidelines for Determining Significance and Technical Report Format and Content Requirements and have hereby been approved by the Deputy Chief Administrative Officer (DCAO) of the Land Use and Environment Group on the 26th day of September, 2006. The Director of Planning and Land Use is authorized to approve revisions to these Guidelines for Determining Significance and Report Format and Content Requirements for Transportation and Traffic, except any revisions to Chapter 4.0 of the Guidelines for Determining Significance for Cultural Resources must be approved by the Deputy CAO.

Approved, September 26, 2006

CHANDRA WALLAR
Deputy CAO

COUNTY OF SAN DIEGO

GUIDELINES FOR DETERMINING SIGNIFICANCE

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EXPLANATION

These Guidelines for Determining Significance for Traffic and information presented herein are used by County staff in their review of discretionary projects and environmental documents pursuant to the California Environmental Quality Act (CEQA). These Guidelines present a range of quantitative, qualitative, and performance levels for particular environmental effects. Normally, (in the absence of substantial evidence to the contrary), non-compliance with a particular standard stated in these Guidelines will usually mean the project will result in a significant effect, whereas compliance will normally mean the effect will be determined to be "less than significant." Section 15064(b) of the State CEQA Guidelines states:

> "The determination whether a project may have a significant effect on the environment calls for careful judgment on the part of the public agency involved, based to the extent possible on factual and scientific data. An ironclad definition of significant effect is not always possible because the significance of an activity may vary with the setting."

These Guidelines assist in providing a consistent, objective and predictable evaluation of significant effects. These Guidelines are not binding on any decision-maker and should not be substituted for the use of independent judgment to determine significance or the evaluation of evidence in the record. The County reserves the right to request further, project specific, information in its evaluation of a project's environmental effects and to modify these Guidelines in the event a scientific discovery or factual data alters the common application of a Guideline. In addition, evaluations to verify the applicability of the significance guidelines for individual project conditions may be necessary. Additional evaluations may include analysis of vehicle headways, speeds, average gaps, queues, delay, or other factors.

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List of Acronyms

ADT	Average Daily Trips
CALTRANS	California Department of Transportation
CEQA	California Environmental Quality Act
CMP	Congestion Management Plan
DPLU	Department of Planning and Land Use
HCM	Highway Capacity Manual
ITE	Institute of Traffic Engineers
LOS	Level of Service
min	Minute
mph	Miles per Hour
MTDB	Metropolitan Transit Development Board
NCTD	North San Diego County Transit District
PFE	Public Facilities Element
RTP	Regional Transportation Plan
SANDAG	San Diego Association of Governments
SANTEC	San Diego Traffic Engineers' Council
sec	Second
TIS	Traffic Impact Study
V/C	Volume to Capacity
VMT	Vehicle Miles Traveled

INTRODUCTION

This document provides guidance for evaluating adverse environmental effects that a proposed project may have on traffic. Specifically, this document addresses the following questions listed in the California Environmental Quality Act (CEQA) Guidelines, Appendix G, XV, Transportation/Traffic[1]:

Would the project:

a) Cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?

b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways? Or individually or cumulatively worsen a road already exceeding the level of standard?[2]

d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

f) Result in inadequate parking capacity?

g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?

Traffic and traffic-related impacts are major concerns for the San Diego Region. As population in the San Diego Region grows, traffic, as measured by average daily trips (ADT), also grows. Land development within the San Diego region contributes to growth in population and growth in traffic. The rate of land development, population and traffic growth has often outpaced the provision of needed transportation infrastructure to adequately accommodate the increased growth. As a result, traffic congestion is a common occurrence on many freeways, highways and arterials in the San Diego region.

[1] The State CEQA Guidelines, Appendix G, XV Transportation/Traffic list two other transportation/traffic related questions (c and e), which are not addressed in this document. Question c states, "Would the project result in a change in air traffic patterns, including either an increase in traffic levels or a change in locations that results in substantial safety risks?" Question c is concerned with airport traffic safety and is addressed under the County's Guidelines for Determining Significance for Airport Hazards. Questions e states, "Would the project result in inadequate emergency access? Question e is addressed under the County's Guidelines for Determining Significance for Fire Protection Planning, which addresses the needs of emergency service providers (fire and sheriff, etc.), including emergency access requirements.

[2] The second part of this question has been added and is not included in Appendix G of the State CEQA Guidelines.

1.0 GENERAL PRINCIPLES AND EXISTING CONDITIONS

The population of the San Diego Region is projected to increase from approximately 2.9 million people today to about 3.9 million in the year 2030. As a result, the number of forecasted vehicle miles traveled (VMT) in the San Diego Region is projected to increase 50 percent from current levels. Road improvements will be needed to accommodate the anticipated growth in traffic; otherwise, traffic congestion will increase significantly.

1.1 Level of Service

As a means of measuring and evaluating traffic congestion, the concept of "level of service" was created. Level of service (LOS) is a quality of service measure that describes operational conditions on a transportation facility, such as a roadway or intersection. Levels of service are established based upon the driver's perspective. This service measure is a general overall measurement of several conditions such as speed and travel time, freedom to maneuver, traffic interruption, and comfort and convenience. Safety is an important concern but, typically, is not included in the measures that establish service levels.

Six LOS categories are defined for each type of facility. Letters designate each level, from A to F, with LOS A representing the best operating conditions and LOS F the worst. Each LOS represents a range of operating conditions and the driver's perception of those conditions. Methods for identifying levels of service vary based upon the type of transportation facility. Criteria for identifying levels of service on County of San Diego arterials are provided in the County of San Diego Public Road Standards. Methods of identifying levels of service for freeways, highways and intersections are provided in the Highway Capacity Manual (HCM). A detailed discussion of level of service and an excerpted table from the Public Road Standards is provided in Attachment A. Also, definitions of some key traffic terms are included in Attachment B.

Levels of service are used primarily to assess how substantial increases in vehicular traffic may affect traffic congestion on specific transportation facilities, such as freeways, arterials, and intersections. Procedures have also been established to adjust the evaluation to account for trucks, buses, grade and pedestrian volumes. Substantial traffic volume increase may also result in other traffic related impacts. Where applicable, evaluations should be made to assess the potential for traffic related impacts for the following items:

- Regional transportation facilities; including freeways, state highways and ramps
- Local circulation and road network
- Adequacy of existing roadway or intersection design features
- Access (both primary and secondary, as required)
- Alternative transportation modes; including pedestrians, bicyclists and transit

1.2 Traffic Impact Studies

In order to evaluate potential traffic impacts that may result from a specific project, traffic impact studies are often prepared. Traffic impact studies include estimates of the amount of traffic generated by the project, distributions of project traffic or redistributions of traffic caused by the project, assessments of potential traffic impacts, and when applicable, the identification of mitigation measures to alleviate project-related traffic impacts.

The agency responsible for final approval of a project's traffic study is the agency that has discretionary approval of the project. For most projects located in the unincorporated area of San Diego, the agency approving the traffic study would be the County of San Diego. However, coordination with other affected agencies is often necessary in the preparation of traffic impact studies. SANDAG is the agency responsible for the oversight of regional transportation planning. The California Department of Transportation (Caltrans) is the State agency responsible for planning, constructing and maintaining the State highway network. In addition to the County of San Diego, eighteen other municipalities within the San Diego Region are responsible for planning, constructing and maintaining local transportation networks within their respective areas of jurisdiction.

For more information on traffic impact studies refer to the County's Transportation and Traffic Report Format and Content Requirements.

1.3 Regional Transportation Plan

On March 28, 2003 the San Diego Association of Governments (SANDAG) Board adopted the 2030 Regional Transportation Plan (RTP). This plan establishes goals and policies for addressing the needs of the regional transportation network in the San Diego region. A needs assessment prepared in 1998, identified that 13 percent (77 of 600 directional-miles) of the San Diego Region's freeway system operated at LOS F, an unacceptable level of service. Although not documented in the report, many of the region's local arterials and highways are also operating at unacceptable levels of service.

The 2030 RTP also estimated that $42 billion dollars would be required to provide needed highway transit and local road projects. If implemented, these projects alone will not fully relieve existing and anticipated future congestion. As the region's population, employment and VMT increase, congestion will also increase unless additional transportation improvements are made. SANDAG is in the process of updating the RTP to address recent funding resources, such as the passage of TRANSNET, and to reflect more recent population and traffic projections. In this effort SANDAG has estimated that there are 29 deficient (LOS F) freeway segments with a total mileage of 117 miles. Additional road and highway improvements may be assumed in the updated plan.

1.4 Parking

Parking requirements in the County are usually addressed on the local level through standards set forth in the County of San Diego Zoning Ordinance, Parking Regulations, Sections 6750-6799 and the County of San Diego Off-Street Parking Design Manual (June 1985), which implements Section 6793(c) of the County Zoning Ordinance.

The purpose of the parking regulations is to provide functionally adequate, safe, convenient and aesthetically pleasing off-street parking and loading facilities for motor vehicles and bicycles. With the exception of certain urbanized areas in the unincorporated portion of San Diego County, the majority of proposed, discretionary land uses have more than sufficient area to feasibly satisfy County parking requirements.

When designing a parking area, the size, location, landscaping and fencing of vehicle and bicycle parking spaces must be considered. Minimum size, location, landscaping and fencing standards are included in the Zoning Ordinance and Off-Street Parking Design Manual. The most frequently applicable parking standards considered during project design are summarized below.

1.4.1 Size of Parking Spaces

The dimension of parking spaces varies depending on angle of parking (0°, 30°, 45°, 60°, or 90°), striping of spaces (single or double), and whether the parking is intended for compact, regular, or handicapped vehicles. Regular parking spaces that are not for parallel parking shall measure 8'-6" x 18'. Handicapped parking spaces that are not for parallel parking shall measure 14'x19'. Different striping plans may further reduce the width of regular and handicapped spaces, as identified in the Off-Street Parking Design Manual.

Most uses, particularly office and retail, also require motorcycle and bicycle spaces, typically at a ratio of 1.5 bicycle spaces for each 10 parking spaces. Where bicycle spaces are required there shall not be less than three spaces provided.

1.4.2 Location of Parking Spaces

Some zones require parking to observe certain setbacks. These standards are outlined in the Zoning Ordinance, Section 6787 and Off-Street Parking Design Manual, Location of Parking on Typical Lots. Generally the location of parking is designed to ensure a safe environment for drivers and passengers exiting a parked vehicle; to provide relatively convenient access to the driver's and passenger's destination; and to minimize indirect impacts to adjoining properties, including noise, visual and lighting impacts.

2.0 EXISTING REGULATIONS AND STANDARDS

The following list details the most significant regulations that address traffic impacts in California and the County of San Diego.

2.1 State Regulations and Standards

California Environmental Quality Act (CEQA)[3]
[http://ceres.ca.gov/topic/env_law/ceqa/guidelines/]
Under the California Environmental Quality Act (CEQA) lead agencies are required to consider traffic impacts when assessing the environmental impacts of proposed projects. CEQA requires discretionary projects to evaluate the effect projects may have of traffic circulation and other transportation related impacts.

2.2 Local Regulations and Standards

Public Facilities Element (Part XII) of the San Diego County General Plan
[http://ceres.ca.gov/planning/counties/San_Diego/plans.html]
The County of San Diego General Plan Public Facilities Element establishes policies and implementation measures regarding the assessment and mitigation of traffic impacts of new development. One of the goals of the Public Facilities Element (PFE) is to provide "A safe, convenient, and economical integrated transportation system including a wide range of transportation modes (PFE, page XII-4-18)." The PFE also identifies an objective in the Transportation Section to provide a "Level of Service C or better on County Circulation Element roads. (PFE, page XII-4-18)." The PFE, however, establishes LOS D as an off-site mitigation threshold for discretionary projects. When an existing Level of Service is already D, "a LOS of D may be allowed (PFE, page XII-4-18)." According to the PFE, projects that significantly increase congestion on roads operating at LOS E or LOS F must provide mitigation. According to the PFE, this mitigation can consist of a fair share contribution to an established program or project to mitigate the project's impacts. If impacts cannot be mitigated, the project will be denied unless a specific statement of overriding findings is made pursuant to Sections 15091 and 15093 of the State CEQA Guidelines to approve the project as proposed.

San Diego County Transportation Impact Fee (TIF) Program/Ordinance
The County of San Diego Board of Supervisors adopted a Transportation Impact Fee Ordinance (April 2005) for the unincorporated area of San Diego County. The ordinance enables the County to implement Transportation Impact Fee programs. The TIF program requires payment of fees that constitute a proposed project's fair share contribution towards the construction costs of the planned transportation facilities that are affected by the proposed development. The TIF fees are collected as a condition of approval of a subdivision or prior to issuance of a development permit, including and most typically a building permit.

[3] Public Resources Code 21000-21178; California Code of Regulations, Guidelines for Implementation of CEQA, Appendix G, Title 14, Chapter 3, §15000-15387.

San Diego County Public Road Standards [http://www.sdcounty.ca.gov/dpw/land/rtelocs.htm]
These standards provide minimum design and construction requirements for public roads. Levels of service are established for Circulation Element roads. Levels of service are not applied with the non-Circulation Element residential roads. Target design capacities, however, have been identified for these roads.

San Diego County Private Road Standards [http://www.sdcounty.ca.gov/dpw/land/rtelocs.htm]
These standards provide minimum design and construction requirements for private roads. Levels of service are not established for private roads. Minimum design and construction requirements, however, are established based upon the projected average daily traffic (ADT) volume on the road.

SANDAG Standards - Congestion Management Program[4]
[http://www.sandag.org/uploads/publicationid/publicationid_736_1278.pdf]
State Proposition 111, passed by voters in 1990, established a requirement that urbanized areas prepare and regularly update a Congestion Management Program (CMP), which is a part of SANDAG's Regional Transportation Plan (RTP). The purpose of the CMP is to monitor the performance of the region's transportation system, develop programs to address near-term and long-term congestion, and better integrate transportation and land use planning. SANDAG, as the designated Congestion Management Agency for San Diego region, must develop, adopt and update the CMP in response to six specific legislative requirements further described in the report. SANDAG, local jurisdictions, and transportation operators (i.e., Caltrans, Metropolitan Transit Development Board (MTDB), North San Diego County Transit District (NCTD), etc.) are responsible for implementing and monitoring the CMP.

The CMP has five major components. One such component is a Land Use Analysis Program. Under this program, the CMP requires a review of large projects that generate 2,400 or more average daily trips or 200 or more peak hour trips. This review must assess impacts to state highways and regionally significant arterials. An excerpted list of these roadways from the CMP is included below. For further information refer to the CMP, Map 4-1 and Exhibit 4-1, pp. 27-28. A copy of the CMP can be obtained from SANDAG or online.

List of CMP System Roadways

CMP Freeways
Interstate 5: Orange County Line to U.S./Mexico Border
Interstate 8: Nimitz Boulevard to Imperial County Line
Interstate 15: Riverside County Line to I-5
Interstate 805: I-5 (North) to I-5 (South)
State Route 52: I-5 to SR 25
State Route 54: I-5 to Briarwood Road
State Route 56: I-5 to Carmel Valley Road and I-15 to Black Mountain Road
State Route 67: Mapleview Street to I-8

[4] Congestion Management Program Update, January 2003, San Diego Regional Planning Agency

State Route 78: I-5 to North Broadway
State Route 94: I-5 to Avocado Boulevard
State Route 125: SR 54 to SR 94
State Route 163: I-15 to I-5
State Route 905: Oro Vista Road to Otay Mesa Road

CMP Highways
State Route 54: I-8 to SR 94
State Route 67: SR 78 to Mapleview Valley
State Route 75: I-5 (North) to I-5 (South)
State Route 76: Coast Highway to SR 79
State Route 78: North Broadway to Imperial County Line
State Route 79: Riverside County Line to I-8
State Route 94: Avocado Boulevard to Old Highway 80
State Route 282: Alameda Boulevard to Orange Avenue

CMP Arterials
(1) Balboa Avenue: I-5 to I-15[5]
(2) Centre City Parkway: I-15 (North) to I-15 (South)
(3) Fletcher Parkway/Broadway/E. Main Street/Greenfield Drive: I-8 (West) to I-8 (East)
(4) La Jolla Village Drive/Miramar Road: I-5 to I-15
(5) Manchester Avenue/El Camino Real: I-5 to SR 76/Mission Avenue
(6) Nimitz Blvd./North Harbor Dr./Grape & Hawthorne Streets/Pacific Highway/Harbor Drive: I-8 to I-5
(7) Olivenhain Road/Rancho Santa Fe Road: El Camino Real to SR 78
(8) Otay Mesa Road-Interim SR 905: SR 905 (West) to SR 905 (East)2
(9) Palomar Airport Road/San Marcos Boulevard: I-5 to SR 78
(10) Sea World Drive/Friars Road/Mission Gorge Road/Woodside Avenue: I-5 to SR 67
(11) Scripps Poway Parkway: I-15 to SR 67
(12) SR 54 & Sweetwater Road-Interim SR 125: I-805 to Broadway[6]

County of San Diego Zoning Ordinance, Parking Regulations, Sections 6750- 6799
[http://www.co.san-diego.ca.us/dplu/docs/z6000.pdf]
The County's Zoning Ordinance sets the standards for parking including requirements for new uses and structures; existing uses and structures; conversion, alterations, or expansion of an existing use or structure; computation of vehicle and bicycle space requirements; location of parking to building sites; parking space dimensions; design of bicycle storage; design standards for off-street parking; loading spaces; variances from parking regulations; and parking of commercial vehicles in residential, agricultural and certain special purpose zones.

[5] This CMP Arterial was formerly designated as CMP State Highway 274.
[6] These CMP Arterials are designated as interim facilities on the CMP network and will be replaced by a state highway following their construction.

County of San Diego Off-Street Parking Design Manual
[http://www.co.san-diego.ca.us/cnty/cntydepts/landuse/planning/zoning/ospdman.pdf]
The County of San Diego Off-Street Parking Design Manual implements Section 6793(c) of the County Zoning Ordinance. This section of the Ordinance relates to the design, dimensions, construction, landscaping, and surfacing of parking and bicycle spaces, and driveways.

2.3 Regional and Local Traffic Impact Analysis Guidelines

San Diego Traffic Engineers' Council (SANTEC) and the Institute of Traffic Engineers (ITE)
The San Diego Traffic Engineers' Council (SANTEC) and the local chapter of the Institute of Traffic Engineers (ITE) have endorsed for use the "Guidelines of Traffic Impact Studies (TIS) in the San Diego Region." These guidelines were prepared by a traffic subcommittee formed by SANDAG. The purpose of the subcommittee was to develop a model set of guidelines for the analysis of traffic impacts for adoption and use by the various jurisdictions in the San Diego region. The goal was to foster more consistency in the assessment of traffic impacts in the San Diego region. These guidelines establish a LOS target of LOS D. Impacts would be identified for those projects that significantly increase the volume and or delay at intersections and road segments operating below LOS D (i.e. at LOS E of LOS F) either prior to or as a result of the proposed project. These guidelines have been incorporated into an appendix of the Regional Congestion Management Program (CMP) that is formally adopted by SANDAG for use by local jurisdictions. These guidelines are often used as a guideline by many local traffic-engineering consultants in the preparation of traffic impact studies in the San Diego Region. These guidelines, however, do not provide specific direction regarding the assessment of cumulative traffic impacts, unsignalized intersections or consistency with recent changes in the CEQA guidelines that removed consideration of de minimus findings/effects.

California Department of Transportation (Caltrans)
The California Department of Transportation (Caltrans) has prepared a "Guide for the Preparation of Traffic Impact Studies." Objectives for the preparation of this guide include providing consistency and uniformity in the identification of traffic impacts generated by local land use proposals. In terms of level of service, Caltrans endeavors to maintain a goal of LOS C on State highway facilities. However, Caltrans acknowledges that this may not always be feasible. In these circumstances, Caltrans often accepts lower LOS on facilities that are currently operating below the LOS C objective.

City of San Diego
The City of San Diego has prepared a "Traffic Impact Study Manual." The purpose is to provide guidelines to consultants on how to prepare traffic impact studies in the City of San Diego and to ensure consistency on the preparation of these studies. Impacts are identified if the proposed project will increase the traffic volume on a road segment above an identified allowable increase. The better the initial level of service on the road segment, the higher the allowable volume increase.

3.0 TYPICAL ADVERSE EFFECTS

3.1 Traffic Congestion

Typical traffic related impacts are most often associated with traffic congestion on local roads and the regional circulation network. As the San Diego region grows, the number of vehicle trips that are generated by residents also grows. Historically, vehicle trips have been increasing at a faster rate than that of the population growth. It is forecasted that more than 16 million vehicle trips would be made in this region each weekday by the year 2030. The automobile is expected to remain the primary method of travel in the region, but new and widened freeways, increased trolley and bus service, better rail service, and additional highway improvements would alleviate some of the traffic congestion. SANDAG's 2030 RTP details some of the regional improvements that are projected to occur within a twenty-year time frame, but even with these improvements individual projects will continue to contribute to traffic congestion.

Traffic congestion usually affects level of service on roadway segments and at intersections and ramps, which in turn results in decreases in traffic flow on roadways and longer queues at intersections and ramps. These delays ad time to drivers daily commutes and can be noticeable impacts of traffic congestion.

3.2 Connectivity

The County's road network is connected by a variety of roadways, which allow drivers to travel throughout the County. However, at times there are physical limitations, such as steep topography, which partially constrain connectivity on existing roadways and preclude the construction on new roadway connections. In order to address connectivity issues alternative road networks to access potential connections may be required.

3.3 Hazards Due to an Existing Transportation Design Feature

Increased traffic generated or redistributed by a proposed project may cause a significant traffic operational impact to an existing transportation design feature and result in potential hazards. These hazards can occur due to a design features or physical configuration of existing or proposed access roads and can adversely affect the safe transport of vehicles along a roadway. The physical conditions of the project site and surrounding area, such as curves, slopes, walls, landscaping or other barriers, may also result in vehicle conflicts with other vehicles or stationary objects.

3.4 Hazards to Pedestrians or Bicyclists

Increased traffic generated or redistributed by a proposed project may cause a significant traffic operational impact to pedestrians or bicyclists and result in potential hazards. These hazards can occur for a variety reasons including:

- A design feature or physical configurations on a road segment or at an intersection that may adversely affect the visibility of pedestrians or bicyclists to drivers entering and exiting the site, and the visibility of cars to pedestrians and bicyclists;

- High amount of pedestrian activity at the project access points.

- Precluding or substantially hindering of the provision of a planned bike lane or pedestrian facility on a roadway adjacent to the project site.

- The physical conditions of the project site and surrounding area, such as curves, slopes, walls, landscaping or other barriers may result in vehicle/pedestrian, vehicle/bicycle conflicts.

- The project may result in a substantial increase in pedestrian or bicycle activity without the presence of adequate facilities.

3.5 Parking Capacity

Typical adverse effects on parking occur when an adequate number of spaces are not incorporated in a project design. The regulations are intended to require adequate off-street parking and loading, thereby reducing traffic congestion, allowing more efficient utilization of on-street parking, promoting more efficient loading operations, and reducing the use of public streets for loading purposes. Additionally, the regulations are intended to minimize the secondary effects of vehicles. These may include vehicular noise or visual impacts from headlights and unscreened parked vehicles. Unscreened parked vehicles are a particular concern when parking adjoins or is adjacent to residential areas or preserve systems that are sensitive to noise and lighting.

4.0 GUIDELINES FOR DETERMINING IMPACT SIGNIFICANCE

This section provides guidance for evaluating adverse environmental effects a project may have on traffic. The guidelines for determining significance are organized into eight categories: road segments, intersections, ramps, congestion management plan, hazards due to an existing transportation design feature, hazards to pedestrians or bicyclists, parking capacity, and alternative transportation. A discussion of how to evaluate project and cumulative level impacts is also included in the Transportation and Traffic Report Format and Content Requirement.

4.1 Road Segments

Pursuant to the County's General Plan Public Facilities Element (PFE), new development must provide improvements or other measures to mitigate traffic impacts to avoid:

(a) Reduction in Level of Service (LOS) below "C" for on-site Circulation Element roads;

(b) Reduction in LOS below "D" for off-site and on-site abutting Circulation Element roads; and

(c) "Significantly impacting congestion" on roads that operate at LOS "E" or "F". If impacts cannot be mitigated, the project will be denied unless a statement of overriding findings is made pursuant to the State CEQA Guidelines. The PFE, however, does not include specific guidelines/thresholds for determining the amount of additional traffic that would "significantly impact congestion" on such roads, as that phrase is used in item (c) above.

The County has created the following guidelines to evaluate likely traffic impacts of a proposed project for road segments and intersections serving that project site, for purposes of determining whether the development would "significantly impact congestion" on the referenced LOS E and F roads. The guidelines are summarized in Table 1. The thresholds in Table 1 are based upon average operating conditions on County roadways. It should be noted that these thresholds only establish general guidelines, and that the specific project location must be taken into account in conducting an analysis of traffic impact from new development.

On-site Circulation Element Roads

PFE, Transportation, Policy 1.1 states that "new development shall provide needed roadway expansion and improvements on-site to meet demand created by the development, and to maintain a Level of Service C on Circulation Element Roads during peak traffic hours". Pursuant to this policy, a significant traffic impact would result if:

- ***The additional or redistributed ADT generated by the proposed land development project will cause on-site Circulation Element Roads to operate below LOS C during peak traffic hours except within the Otay Ranch project as defined in the Otay Subregional Plan Text, Volume 2. PFE, Implementation Measure 1.1.2.***

Off-site Circulation Element Roads

PFE, Transportation, Policy 1.1 also states that "new development shall provide needed roadway expansion and improvements off-site to meet demand created

by the development, and to maintain a Level of Service D on Circulation Element Roads." "New development that would significantly impact congestion on roads operating at LOS E or F, either currently or as a result of the project, will be denied unless improvements are scheduled to improve the LOS to D or better or appropriate mitigation is provided." The PFE, however, does not specify what would significantly impact congestion or establish criteria for evaluating when increased traffic volumes would significantly impact congestion. The following significance guidelines provided are the County's preferred method for evaluating whether or not increased traffic volumes generated or redistributed from a proposed project will "significantly impact congestion" on County roads, operating at LOS E or F, either currently or as a result of the project.

Traffic volume increases from public or private projects that result in one or more of the following criteria will have a significant traffic volume or level of service traffic impact on a road segment, unless specific facts show that there are other circumstances that mitigate or avoid such impacts:

- ***The additional or redistributed ADT generated by the proposed project will significantly increase congestion on a Circulation Element Road or State Highway currently operating at LOS E or LOS F, or will cause a Circulation Element Road or State Highway to operate at a LOS E or LOS F as a result of the proposed project as identified in Table 1, or***

- ***The additional or redistributed ADT generated by the proposed project will cause a residential street to exceed its design capacity.***

Table 1
Measures of Significant Project Impacts to Congestion on Road Segments
Allowable Increases on Congested Road Segments

Level of service	Two-lane road	Four-lane road	Six-lane road
LOS E	200 ADT	400 ADT	600 ADT
LOS F	100 ADT	200 ADT	300 ADT

Notes:
1. By adding proposed project trips to all other trips from a list of projects, this same table must be used to determine if total cumulative impacts are significant. If cumulative impacts are found to be significant, each project that contributes any trips must mitigate a share of the cumulative impacts.
2. The County may also determine impacts have occurred on roads even when a project's traffic or cumulative impacts do not trigger an unacceptable level of service, when such traffic uses a significant amount of remaining road capacity.

The first significance criterion listed in Table 1 addresses roadways presently operating at LOS E. Based on these criteria, an impact from new development on an LOS E road would be reached when the increase in average daily trips (ADT) on a two-lane road exceeds 200 ADT. Using SANDAG's "Brief Guide for Vehicular Traffic Generation Rates for the San Diego Region" for most discretionary projects this would generate less than 25 peak hour trips. On average, during peak hour conditions, this would be

only one additional car every 2.4 minutes. Therefore, the addition of 200 ADT, in most cases, would result in changes to traffic flow that would not be noticeable to the average driver and therefore would not constitute a significant impact on the roadway. Significance criteria were also established for four-lane and six-lane roads operating at LOS E and are based upon the above 24 hour ADT significance criterion established for two-lane roads. The two-lane road criterion was doubled to determine impacts to four-lane roads and tripled to determine impacts to six-lane roads. This was considered to be conservative since the 24 hour per lane road capacity for a 4-lane road is more than double that of a two-lane road and the per lane capacity of a six-lane road is more than triple that of the two-lane road. For LOS E roads, the additional significance criteria are 400 ADT for a four-lane road and 600 ADT for a six-lane road. Similar to criterion for two-lane roads, the 400 ADT for a 4-lane road and 600 ADT for a 6-lane road criteria would generate less than 25 per lane peak hour trips for most discretionary projects. On average, during peak hour conditions, this would be only one additional car per lane every 2.4 minutes. The addition of 200 ADT per lane (400 ADT for a 4 lane road or 600 ADT for a 6 lane road) , in most cases, would result in changes to traffic flow that would not be noticeable to the average driver and therefore would not constitute a significant impact on the roadway. Road capacities based upon level of service for County roads (two-lane, four-lane and six-lane) are provided in Attachment A.

The second significance criteria listed in Table 1 addresses roadways presently operating at LOS F. Under LOS F congested conditions, small changes and disruptions to the traffic flow on County Circulation Element Roads can have a greater effect on traffic operations when compared to other LOS conditions. In order to better account for potential effects of increased traffic on LOS F roads more stringent significance criteria was established when compared to that for LOS E. Based on this guidance, an impact from new development on an LOS F road would be reached when the increase in average daily trips (ADT) on a two-lane road exceeds 100. Again, using SANDAG's "Brief Guide for Vehicular Traffic Generation Rates for the San Diego Region" for most discretionary projects this would generate less than 12.5 peak hour trips. On average, during peak hour conditions, this would be only one additional car every 4.8 minutes. The addition of 100 ADT, in most cases, would not be noticeable to the average driver and therefore would not constitute a significant impact on the roadway. The same approach used to determine significance criteria for four-lane and six-lane roads operating at LOS E was used to determine appropriate significance criteria for four-lane and six-lane roads operating at LOS F. Based on this approach, the significance criteria for a four-lane road (200 ADT) and for a six-lane road (300 ADT) would generate less than 12.5 per lane peak hour trips for most discretionary projects. On average, during peak hour conditions, this would be only one additional car per lane every 4.8 minutes. The addition of 100 per lane ADT (200 ADT for a 4-lane road and 300 ADT for a 6-lane road) would, in most cases, not be noticeable to the average driver and therefore would not constitute a significant impact on the roadway. In summary, under extremely congested LOS F conditions, small changes and disruptions to the traffic flow can significantly affect traffic operations and additional project traffic can increase the likelihood or frequency of these events. Therefore, the LOS F ADT significance criteria was set at 100 ADT (50% of the LOS E threshold) to provide a higher level of assurance

that the traffic allowed under the threshold would not significantly impact traffic operation on the road segment.

Non-Circulation Element Residential Streets

Levels of service are not applied to residential streets since their primary purpose is to serve abutting lots and not to carry through traffic, however, for projects that will substantially increase traffic volumes on residential streets, a comparison of the traffic volumes on the residential streets with the recommended design capacity must be provided. Recommended design capacities for residential non-Circulation Element streets are provided in the San Diego County Public and Private Road Standards. Traffic volume that exceeds the design capacity on residential streets may impact residences and should be analyzed on a case-by-case basis.

4.2 Intersections

This section provides guidance for evaluating adverse environmental effects a project may have on signalized and unsignalized intersections.

4.2.1 Signalized

Traffic volume increases from public or private projects that result in one or more of the following criteria will have a significant traffic volume or level of service traffic impact on a road segment:

- ***The additional or redistributed ADT generated by the proposed project will significantly increase congestion on a signalized intersection currently operating at LOS E or LOS F, or will cause a signalized intersection to operate at a LOS E or LOS F as identified in Table 2.***

Table 2
Measures of Significant Project Impacts to Congestion on Intersections
Allowable Increases on Congested Intersections

Level of service	Signalized	Unsignalized
LOS E	Delay of 2 seconds	20 peak hour trips on a critical movement
LOS F	Delay of 1 second, or 5 peak hour trips on a critical movement	5 peak hour trips on a critical movement

Notes:
1. **A critical movement is one that is experiencing excessive queues.**
2. **By adding proposed project trips to all other trips from a list of projects, these same tables are used to determine if total cumulative impacts are significant. If cumulative impacts are found to be significant, each project that contributes any trips must mitigate a share of the cumulative impacts.**
3. **The County may also determine impacts have occurred on roads even when a project's traffic or cumulative impacts do not trigger an unacceptable level of service, when such traffic uses a significant amount of remaining road capacity.**

The significance criterion for signalized intersections identified in Table 2 allows an increase in the overall delay at an intersection operating at LOS E of two seconds. This is consistent with the capacity threshold contained in the SANDAG's CMP and guidelines established by the City of San Diego. A delay of two seconds is a small fraction of the typical cycle length for a signalized intersection that ranges between 60 and 120 seconds. The likelihood of increased queues forming due to the additional two seconds of delay is low. Therefore, an increased wait time of two seconds, on average, would result in changes to traffic flow that would not be noticeable to the average driver. Therefore the significance guideline for intersections operating at LOS E is 2 seconds.

The primary significance criterion for signalized intersections operating at LOS F conditions was based upon increased delay at the intersection. Under LOS F congested conditions, small changes and disruptions to the traffic flow to signalized intersections can have a greater effect on overall intersection operations when compared to other LOS conditions. In order to better account for potential effects of increased traffic at signalized intersections operating at LOS F, a more stringent guideline was established when compared to signalized intersection operating at LOS E. A significance guideline of an increased delay of 1 second was established for signalized intersections operating at LOS F. An increase in the overall delay at an intersection of one second, on average, would result in changes to traffic flow that would not be noticeable to the average driver. Therefore the significance guideline for intersections operating at LOS F is 1 second.

Signalized intersections operating at LOS F also have the potential for substantial queuing at specific turning movements that may detrimentally effect overall intersection and/or road segment operations. Thus, an increase of peak hour trips to a critical move was also established as a secondary significance criterion for signalized intersections. A critical movement would be a movement or a lane at an intersection that is experiencing queuing or substantial delay and is affecting the overall operation of the intersection. The increase in peak hour trips to a critical move is a measurement of how many cars can be added to an existing queue. The addition of five trips (peak hour) per critical movement will normally be considered a significant impact. This significance criterion was selected because the five additional trips spread out over the peak hour would not significantly increase the length of an existing queue and would not be noticeable to the average driver (one trip every 12 minutes or 720 seconds). For LOS E intersections, the 5 peak hour trips to a critical movement would not be noticeable to the average driver since the one additional trip during the 12 minute interval on average would clear the traffic signal cycles well within the 12 minute period. It should also be noted that if the 5 additional peak hour trips arrived at the same time these trips would also clear the traffic cycle and existing queue lengths would be re-established.

4.2.2 Unsignalized

The operating parameters and conditions for unsignalized intersections differ dramatically from those of signalized intersections. Very small volume increases on one leg or turn and/or through movement of an unsignalized intersection can substantially affect the calculated delay for the entire intersection. Significance criteria for unsignalized intersections are based upon a minimum number of trips added to a critical movement at an unsignalized intersection.

Traffic volume increases from public or private projects that result in one or more of the following criteria will have a significant traffic volume or level of service traffic impact on a road segment:

- ***The additional or redistributed ADT generated by the proposed project will add 20 or more peak hour trips to a critical movement of an unsignalized intersection, and cause an unsignalized intersection to operate below LOS D, or***

- ***The additional or redistributed ADT generated by the proposed project will add 20 or more peak hour trips to a critical movement of an unsignalized intersection currently operating at LOS E, or***

- ***The additional or redistributed ADT generated by the proposed project will add 5 or more peak hour trips to a critical movement of an unsignalized intersection, and cause the unsignalized intersection to operate at LOS F, or***

- ***The additional or redistributed ADT generated by the proposed project will add 5 or more peak hour trips to a critical movement of an unsignalized intersection currently operating at LOS F, or***

- ***Based upon an evaluation of existing accident rates, the signal priority list, intersection geometrics, proximity of adjacent driveways, sight distance or other factors, it is found that the generation rate is less than those specified above, and would significantly impact the operations of the intersection.***

The significance guidelines for unsignalized intersections identify a minimum number of trips added to a critical movement at an unsignalized intersection. Since the operations of unsignalized intersections under congested conditions are heavily influenced by traffic volume increases on critical moves, the significance guidelines for unsignalized intersections were based upon the number of trips added to a critical movement. This guideline directly relates to the number of vehicles that can be added to an existing queue that forms at the intersection. A significance criteria of twenty trips (peak hour) per critical movement was used for LOS E conditions. Although delays drivers experience under LOS E condition may be noticeable, they are not yet considered

unacceptable. The twenty trips spread out over the peak hour would not likely cause the intersection delay or existing queue lengths to become unacceptable. The twenty trips (peak hour) would not be noticeable to the average driver. A significance guideline of five trips (peak hour) per critical movement was used for LOS F conditions. The five trips spread out over the peak hour would not significantly increase the length of an existing queue and would not be noticeable to the average driver.

The operations of unsignalized intersections under congested conditions are heavily influenced by traffic volume increases on critical moves. Therefore, the significance guidelines for unsignalized intersections are based upon the number of peak hour trips added to a critical movement at that intersection. This guideline examines the number of vehicles that may be added to an existing queue that forms at the intersection by the additional traffic generated by a project. In LOS E situations, the delays that drivers experience are noticeable, but are not considered excessive. A peak hour increase of twenty trips to the critical movement of an unsignalized intersection would be, on average, one additional car every 3.0 minutes or 180 seconds. Assuming the average wait time for a vehicle in the critical movement queue is less than 3.0 minutes, which is typical for LOS E condition, this would not be noticeable to the average driver and would not be considered a significant impact.

For LOS F conditions, a significance threshold of five trips (peak hour) per critical movement was used. The five trips spread out over the peak hour would not significantly increase the length of an existing queue and would not be noticeable to the average driver. Five trips spread out over an hour would be one car every 12 minutes. This typically exceeds the average wait time in the queue and would not be noticeable to the average driver.

4.3 Ramps

Additional or redistributed ADT generated by the proposed project may significantly increase congestion at a freeway ramp. Caltrans' "Guide for the Preparation of Traffic Impact Studies" states that an operational analysis based upon Caltrans Highway Design Manual should be used in the evaluation of the ramps and in the preparation of the operational analysis that Caltrans' Ramp Metering Guidelines should be used. However, specific criteria for the determination of an impact at a ramp are not provided in the above documents.

The CMP includes guidelines for the determination of traffic impacts at a ramp. These guidelines are summarized in Table 3. Table 3 may be used as a guide in determining significant increases in congestion on ramps and for addressing congestion management plan impacts. Other factors that may be considered include ramp metering, location (rural vs. urban), ramp design, and the proximity of adjacent intersections. Coordination with Caltrans and the local jurisdiction should be conducted to determine appropriate impact criteria for the specific ramps being assessed.

4.4 Congestion Management Plan

Projects that generate over 2,400 ADT or 200 peak hour trips, must comply with the traffic study requirements of SANDAG's Congestion Management Plan. Trip distributions for these projects must also use the current regional computer traffic model. Projects that must prepare a CMP analysis should also follow the CMP traffic impact analysis guidelines. A summary of these guidelines is provided in Table 3.

Table 3
Measure of Significant Project Traffic Impacts for Circulation Element Roads, Signalized Intersections, and Ramps

Level of Service With Project	Allowable Change Due to Project Impact						
	Freeways		Roadway Segments*		Intersections**	Ramps***	Ramps with >15 min. delay
	V/C	Speed (mph)	V/C	Speed (mph)	Delay (sec.)	Delay (min.)	Delay (min.)
E & F	0.01	1	0.02	1	2	-	2

* For County arterials, which are not identified in SANDAG's Regional Transportation Plan and Congestion Management Plan as regionally significant arterials, significance may be measured based upon an increase in average daily trips. The allowable change in ADT due to project impacts in this instance would be identified in Table 1.

** Signalized intersections.

*** See the Transportation and Traffic Report Format and Content Requirements for guidance on ramp metering analysis.

KEY

V/C	=	Volume to Capacity ratio
Speed	=	Speed measured in miles per hour
Delay	=	Average stopped delay per vehicle measured in seconds, or minutes
LOS	=	Level of Service
ADT	=	Average Daily Trips

4.5 Hazards Due to an Existing Transportation Design Feature

Many roadways and intersections in the County were designed and constructed prior to the adoption of current road design standards. The design of the roadways and intersections, while adequate for existing traffic volumes, may pose an increased risk if traffic volumes substantially increase along the road segment or at the intersection as a result of the proposed project. Increased traffic generated or redistributed by a proposed project may cause a significant traffic operational impact to an existing transportation design feature. Therefore, it is necessary to evaluate potential hazards to an existing transportation design feature.

The determination of significant hazards to an existing transportation design feature shall be on a case-by-case basis, considering the following factors:

- Design features/physical configurations of access roads may adversely affect the safe transport of vehicles along the roadway.

- The percentage or magnitude of increased traffic on the road due to the proposed project may affect the safety of the roadway.

- The physical conditions of the project site and surrounding area, such as curves, slopes, walls, landscaping or other barriers, may result in vehicle conflicts with other vehicles or stationary objects.

- The project does not conform to the requirements of the private or public road standards, as applicable.

4.6 Hazards to Pedestrians or Bicyclists

Many roadways and intersections in the County do not have pedestrian or bicycle facilities. The roadways and intersections, while adequate for current conditions, may pose an increased risk if traffic volumes, pedestrian volumes, or bicycle volumes substantially increase along the road segment or at the intersection, as a result of the proposed project. Increased traffic generated or redistributed by a proposed project may cause a significant traffic operational impact to pedestrians or bicyclists. Therefore, it is necessary to evaluate potential hazards to pedestrians or bicyclists.

The determination of significant hazards to pedestrians or bicyclists shall be on a case-by-case basis, considering the following factors:

- Design features/physical configurations on a road segment or at an intersection that may adversely affect the visibility of pedestrians or bicyclists to drivers entering and exiting the site, and the visibility of cars to pedestrians and bicyclists.

- The amount of pedestrian activity at the project access points may adversely affect pedestrian safety.

- The project may result in the preclusion or substantial hindrance of the provision of a planned bike lane or pedestrian facility on a roadway adjacent to the project site.

- The percentage or magnitude of increased traffic on the road due to the proposed project may adversely affect pedestrian and bicycle safety.

- The physical conditions of the project site and surrounding area, such as curves, slopes, walls, landscaping or other barriers may result in vehicle/pedestrian, vehicle/bicycle conflicts.

- The project does not conform to the requirements of the private or public road standards, as applicable.

- The project may result in a substantial increase in pedestrian or bicycle activity without the presence of adequate facilities.

4.7 Parking Capacity

The following significance guideline will be considered a potentially significant parking capacity impact.

- ***The project cannot demonstrate compliance with the standards set forth by the County of San Diego Zoning Ordinance (Sections 6750-6799) and the County of San Diego Off-Street Parking Design Manual.***

Urban planners set minimum parking requirements for every land use type. These requirements are designed to ensure that land developers will provide enough spaces to satisfy the peak demand for parking to the subject use. The requirements are typically listed in a jurisdiction's zoning ordinance and this is the case in the County of San Diego, with a supplemental Off-Street Parking Design Manual. The establishment of minimum standards in the Zoning Ordinance is primarily based on surveys of nearby cities and consultation with professional traffic engineering association publications, such as the Institute of Transportation Engineers (ITE) handbooks. Identifying an adequate number of peak hour parking spaces for each use is not an exact science and there is no uniform formula or origin of minimum parking requirements (Shoup, 1999). Instead minimum parking standards have been developed through a trial and error process to identify the appropriate minimum standards for the subject jurisdictions. The County of San Diego practiced this same technique when parking minimum parking standards were last updated in 1985. Based on the continued fine-tuning of minimum parking standards, non-compliance with the County of San Diego Zoning Ordinance and Off-Street Parking Design Manual will result in a potentially significant impact.

4.8 Alternative Transportation

Alternative transportation is addressed in the County's General Plan Public Facilities Element (PFE). The County's stated objective for alternative transportation is addressed by the PFE, Objective 4. Objective 4 asks for a "Reduction in the demand on the road system through increased public use of alternate forms of transportation and other means." Pursuant to Objective 4, Policies 4.1 – 4.4 establish a means for the County to meet the objective. As such, if a proposed project is not in conformance with the applicable alternative transportation policies in the PFE, a significant conflict with the County's alternative transportation policies may occur.

5.0 STANDARD MITIGATION AND PROJECT DESIGN CONSIDERATIONS

If a proposed project's traffic results in a significant traffic impact (as per the criteria specified above), mitigation for the traffic impact must be proposed, unless mitigation is infeasible pursuant to CEQA. Potential mitigation measures can include traffic signal improvements, physical road improvements, street re-striping and parking prohibitions, fair share contributions toward identified and scheduled projects, and transportation demand management programs. A variety of possible generalized mitigation measures are provided below. Consult with County staff, as necessary, for further information. Conceptual striping plans to ensure feasibility of the proposed mitigation measures may be required.

5.1 Traffic Signal Improvements

- New Signal (provided that it meets traffic signal warrants)
- Signal modifications including signal timing, coordination, phasing improvements, etc.

5.2 Physical Road Improvements

- Turn Restrictions
- New Roadway
- Curve Realignment
- Roadway widening to add lanes or shoulders
- Provision of pathway or sidewalk
- Extension of truncated street
- Redesign of freeway on- and off-ramps
- Median construction/modification to restrict access
- Flaring of intersections to add turn lanes
- Provision of passing lanes or turnouts
- Acceleration and deceleration lanes
- Removal of obstructions (vegetation, rock outcroppings, utilities, etc.)
- Roundabouts

5.3 Street Re-striping and Parking Restrictions

- Re-striping to add lanes with or without parking removal or restrictions
- Protected left-turn pockets, or free right turn lanes
- Parking restrictions, daily or during peak hours

5.4 Fair Share Contributions

- Payment of the County's Traffic Impact Fee (cumulative impacts only)
- To approved road projects identified in the County's Capital Improvement Plan
- To traffic signals identified in the County's Traffic Signal Plan

5.5 Transportation Demand Management*

- Flexible or staggered work hours
- Traffic control measures
- Transit incentives and improvements including subsidized transit passes, bus turnouts, or bus shelters/benches
- Carpool, vanpool programs and participation in a computerized matching system

* Implementation of these measures will require monitoring on an on-going basis.

5.6 Traffic Safety/Hazards to Pedestrians or Bicyclists

If traffic safety or pedestrian/bicycle safety impacts are present, then conditions are placed on a project prior to approval to address those concerns. Often, compliance with County of San Diego Public or Private Road Standards will provide sufficient mitigation for an identified impact. However, site specific mitigation measures, such as the improvement of sight distance along the frontage of a project, will be imposed as a condition of approval. Conceptual striping plans to ensure feasibility of the proposed mitigation measures may be required.

Projects that would generate a high demand for pedestrian traffic such as schools, shopping centers, and large office parks should identify likely pedestrian and bicycle routes to the facilities and identify needed facilities to accommodate the pedestrian demand.

Bicycle lanes and routes designated on the County's General Plan must be specified and existing facilities identified. Provisions to provide/accommodate the ultimate right-of-way needed to construct designated bike lanes must be incorporated into the proposed project. Construction of bicycle lanes may be based upon the demand and connections to existing facilities in the area and input from the local community planning/sponsor group.

5.7 Parking Capacity

There is no standard mitigation for projects that propose an inadequate amount of parking spaces. Demonstration of compliance with the County Zoning Ordinance requirements is mandatory prior to approval of a discretionary land use project, unless a variance has been granted; therefore, there should be no adverse impact that would require mitigation. Typically, a project will not be approved if an inadequate amount of parking spaces are proposed.

5.8 Alternative Transportation

Alternative transportation is addressed in the County's General Plan Public Facilities Element (PFE), Policies 4.1 – 4.4. The PFE identifies several viable ways of promoting alternative transportation and to reduce demand on the road system. However, many of these solutions are programmatic in nature and cannot typically be implemented by an individual project. Program level solutions include establishing incentive programs for employers to encourage their employees to use alternative transportation and coordinating the planning and development of transit centers with other jurisdictions and public transportation agencies. Project level solutions include identifying the need for transit improvements for large scale projects and conditioning new development on the dedication and construction of bikeways as indicated in the Circulation Element's Bicycle Network.

6.0 REFERENCES

California Department of Transportation, Guidelines for the Preparation of Traffic Impact Studies, May 18, 2000.

California Public Resources Code, California Environmental Quality Act (PRC §21000-21178).

City of Los Angeles, Draft L.A. CEQA Thresholds Guideline, Section F, Transportation, Section F.1 through F.8. Unadopted document, May 14, 1998.

City of San Diego, Traffic Impact Study Manual, July 1998.

County of San Diego
CEQA Guidelines, 2006.

General Plan - Part XII, Public Facility Element, San Diego County General Plan. Adopted March 13, 1991, GPA 90-FE.

Guidelines for the Implementation of the California Environmental Quality Act. Pages 115-118. Department of Planning and Land Use. Unadopted document, August 1991.

Off-Street Parking Design Manual, June 1985.

Transportation Impact Fee Ordinance and reports, April 2005.

Zoning Ordinance (Parking Regulations, Sections 6706, 6750 through 6799)

Institute of Transportation Engineers (ITE). Traffic Access and Impact Studies for Site Development (A Recommended Practice), 1991.

San Diego Association of Governments
Draft Environmental Impact Report for the 2020 Regional Transportation Plan. Prepared by RECON, November 19, 1999.

2020 Regional Transportation Plan. Prepared by the San Diego Association of Governments, 1999a.

San Diego Traffic Engineers' Council (SANTEC) and the Institute of Transportation Engineers (ITE). SANTEC/ITE Guidelines for Traffic Impact Studies (TIS) in the San Diego Region (draft), March 2, 1999.

Shoup, Donald C. The Trouble with Minimum Parking Requirements, December 9, 1999.

[Attachment A]

LEVELS OF SERVICE SUMMARY

Background

Level of Service

Level of service (LOS) is a quality of service measure that describes operational conditions on a transportation facility, such as a roadway or intersection. This service measure is a general overall measurement of several conditions such as speed and travel time, freedom to maneuver, traffic interruption, comfort and convenience.

Six LOS categories are defined for each type of facility. Letters designate each level, from A to F, with LOS A representing the best operating conditions and LOS F the worst. Each LOS represents a range of operating conditions and the driver's perception of those conditions. Safety is not included in the measures that establish service levels.

Each transportation facility type has one or more of service measure that serves as the primary determinant of level of service for that facility type. This LOS-determining parameter is called the service measure or sometimes the measure of effectiveness (MOE). The MOE will vary from facility type to facility type. For instance, for intersections the MOE will be delay; for a road segment it may be the 24-hour volume, the volume to capacity ratio, speed or travel time along the facility.

Capacity

The capacity of a facility is the maximum number of persons or vehicles that can be expected to traverse a point or uniform section of road within a specified time frame under prevailing roadway, traffic and control conditions. Theoretically, this is the point in which the flow rate (vehicles/hour) on the facility is the highest. At lower traffic volumes, the peak hour operations will be low density with higher speeds. At higher traffic volumes, the peak hour operations will be of higher density, but at lower speeds. The flow rate can be measured in 15 minute, hourly or 24-hour intervals. Some general relationships/estimates have been established/assumed for converting from 24-hour average daily traffic measurements to peak hour measurements and vice-versa.

The highest volume attainable under LOS E defines the capacity of the arterial or collector. Operating conditions at capacity are unstable and difficult to predict. If this capacity is exceeded, operating conditions on the roadway change dramatically. Average travel speeds are extremely low, stop-and-go traffic occurs and excessive queuing may be present.

The capacity is related to level of service. The LOS E/LOS F threshold is identified as the capacity of the facility (roadway or intersection). Volumes to capacity ratios are calculated based upon this capacity (LOS E/LOS F) threshold.

Roadways

Roadways are classified based upon the roadway's function, control conditions and type roadside development, including its specific use, density and intensity. Road classifications for roadways located within the unincorporated area are described in the County of San Diego's General Plan Circulation Element and in the County of San Diego Public Road Standards. The road classifications provided therein may be grouped into four categories, arterials, collectors, residential roads and industrial/commercial roads. A description of each category and the method of determining LOS for each are discussed below:

Freeways

A freeway is defined as a divided highway with full control of access and two or more lanes for the exclusive use of traffic in each direction. Freeways provide uninterrupted flow. There are no signalized or stop-controlled intersections and direct access to and from adjacent property is not permitted. Access to the freeway is limited to ramp locations. Raised barriers, at-grade medians or continuous raised medians separate opposing directions of travel.

Operating conditions on a freeway primarily result from interactions among vehicles and drivers. Although speed is a major concern of drivers as related to service quality, freedom to maneuver within the traffic stream and proximity to other vehicles are equally noticeable concerns. These qualities are related to the density of the traffic stream. Unlike speed, density increases up to capacity.

The LOS criteria for freeways are defined to represent reasonable ranges in the three critical flow variables, speed, density and flow rate. They are as follows:

LOS A describes free flow operations. Free flow speeds prevail. Vehicles are almost completely unimpeded in their ability to maneuver in the traffic stream. The effects of incidents or point breakdowns are easily absorbed at this level.

LOS B represents reasonably free flow and free flow speeds are maintained. The ability to maneuver in the traffic stream is only slightly restricted, and the general level of physical and psychological comfort provided to drivers is still high. The effects of minor incidents and point breakdowns are still easily absorbed.

LOS C provides for flow with speeds at or near the free flow speed. Freedom to maneuver is noticeably restricted, and lane changes require more care and vigilance on the part of the driver. Minor incidents may still be absorbed, but the local deterioration in service will be substantial. Queues may be expected to form behind any significant blockage.

LOS D is the level at which speeds begin to decline slightly with increasing flows and density begins to increase somewhat more quickly. Freedom to maneuver is more

noticeably limited, and the driver experiences reduced physical and psychological comfort levels. Even minor incidents can be expected to create queuing, because the traffic stream has little space to absorb disruptions.

LOS E describes operations at capacity, the highest density value. Operations at this level are volatile, because there are virtually no usable gaps in the traffic stream. Vehicles are closely spaced, leaving little room to maneuver. Speeds still exceed 49 mph. At capacity the traffic stream has no ability to dissipate even the most minor disruption, and any incident can be expected to produce a serious breakdown with excessive queuing. Maneuverability in the traffic stream is extremely limits and the level of physical and psychological comfort afforded the driver is poor.

LOS F describes breakdowns in vehicular flow. Such conditions generally exist within queues forming behind breakdown points. These may occur for a number of reasons, such as traffic incidents, merges, and lane drops. The breakdowns occur when the ratio of existing demand to actual capacity (or of forecasted demand to estimated capacity) exceed 1.00.

The level of service for freeway segments is estimated by calculating the demand to capacity or volume to capacity ratio. It is based upon the peak 15 min traffic flow as expressed in vehicles per hour. Adjustments to account for the types of vehicle in the traffic flow are provided in the HCM. Adjustments to the capacity to account for geometrics, grade and environmental factors, such as adverse weather conditions, are also provided.

Two-Lane Highways

A two-lane highway is a two-lane undivided roadway with one lane for each direction of travel. Traffic signals are spaced over two miles apart along the highway. Passing a slower vehicle requires the use of the opposing lane as sight distance and gaps are available. As volumes and geometric restrictions increase, the ability to pass decreases and platoons form. Motorists in platoons are subject to delay because they are unable to pass.

Many two-lane highways are located within the County of San Diego unincorporated area. These are primarily State highways such as SR 67, SR 76, SR 78 and SR 94. For State highways Caltrans design standards, which utilize a peak hour HCM analysis, is used. This methodology estimates traffic operations based upon terrain, geometric design and traffic conditions. Base conditions for terrain and geometric design have been identified which are applicable for most route segments. Procedures to account for segments, which differ from the base conditions, are also provided. The methodology is typically applied to highway segments at least 2 mile long.

In the HCM two-lane highways are categorized into two classes for analysis;

Class I – These are two-lane highways on which motorists expect to travel at relatively high speeds. These include major intercity routes connecting major traffic generators, daily commuters, or primarily links in the state or national highway network. They serve long distance trips or serve as connecting links between facilities that serve long trips.

Class II - These are two-lane highways on which motorists do not necessarily expect to travel at high speeds. They function as access routes to Class I facilities, serve as scenic/recreational routes or pass through rugged terrain. They often serve short trips, the beginning or ending portion of a longer trip or trips for which sightseeing/recreation plays a significant role.

The primary measures of level of service for Class I two-lane highways are percent time following and average travel speed. For Class II two-lane highways level of service is based only upon time spent following. Levels of service criteria of two-lane highways are defined based upon the peak period (15 min flow periods) and are intended for application to segments of significant length. They are defined as follows:

LOS A describes the highest quality of service, when motorists are able to travel at their desired speed. Without strict enforcement average speeds of 55 mph would be expected on Class I two-lane highways and platoons of three or more vehicles are rare. On Class II two-lane highways speeds may fall below 55 mph but motorists will not be delayed in platoons more than 40 % of their travel time.

LOS B characterizes traffic flow with speeds of 50 mph (slightly higher on level terrain), on Class I two-lane highways, and drivers are delayed in platoons up to 50 percent of the time. On Class II two-lane highways speeds may fall below 50 mph but motorists will not be delayed in platoons more than 55 % of their travel time.

LOS C describes further increases in traffic flow, resulting in noticeable increases in platoon formation, platoon size and frequency of passing impediments. The average speed still exceeds 45 mph on level terrain Class I two-lane highways. Although traffic flow is stable it is susceptible to congestion due to turning vehicles and slow-moving traffic. Percent time following may reach 65 %. On Class II two-lane highways speeds may fall below 45 mph but motorists will not be delayed in platoons more than 70 % of their travel time.

LOS D describes unstable flow. The two opposing traffic streams begin to operate separately and passing becomes extremely difficult. Turning vehicles and roadside distractions may cause disruptions to the traffic stream. The average speed of 40 mph can still be maintained on Class I two-lane highways, under base conditions, but mean platoon sizes of 5 to 10 vehicles are common. On Class II two-lane highways speeds may fall below 40 mph but motorists will not be delayed in platoons more than 85 % of their travel time.

LOS E traffic flow conditions have a percent time following greater than 80% for Class I two-lane highways and greater than 85% on Class II two-lane highways. Speeds may drop below 40 mph on Class I highways and may be as low as 25 mph on sustained grades. Passing is virtually impossible. Platooning becomes intense as slower vehicles or other interruptions are encountered.

LOS F represents heavily congested flow and speeds are highly variable.

The highest volume attainable under LOS E defines the capacity of the two-lane highway. Generally, this is 3,200 peak hour trips in both directions. Operating conditions at capacity are unstable and difficult to predict.

Arterials and Collectors

Arterials are roadways that primarily serve longer through trips. Providing access to abutting commercial and residential land uses is also an important function of arterials. Traffic signals are, typically, located at many intersections with public roads and major access points to adjacent land uses. Collectors are roadways provide both land access and traffic circulation. Their access function is more important than that of arterials and unlike arterials their operations is not always dominated by traffic signals.

On arterials, which are predominately uninterrupted on segments between major intersections, the Highway Capacity Manual 2000 evaluation method for Urban Streets may be used. Average travel speed on the road way is used as the determinant of operating LOS. The average travel speed is related to the traffic volume on the road. Exhibit 10-7 in the HCM 2000 provides a service volume Table that contains approximate hourly volumes and corresponding level of service estimates for different roadway types. Typically, the capacity of arterials, which have few interruptions between major intersections, is limited by the capacity of the intersections along the roadway.

The Highway Capacity Manual 2000 includes a method for evaluating level of service for urban streets. Urban streets are identified in the HCM 2000 as arterials with traffic signals spaced two miles or less apart. The HCM methodology primarily assesses the travel speed and level of service of the urban street based upon the operations and delay that occurs at the intersection along the urban street. A roadway's access function, however, is not assessed/included in this methodology. The level of access provided by a roadway should also be considered in evaluating its performance.

Most County arterials and collectors have frequent interruptions between major intersections. Capacity and level of service for arterials and collectors in the County of San Diego are usually determined based 24-hour average daily traffic according to Table 2 in the County of San Diego Standards for Public Roads. The 24-hour average daily traffic volumes are identified for each LOS category. They were based upon historical operations of County roads, comparisons with standards from other jurisdictions, and comparison with Highway Capacity Manual tables/guidelines. They account for both mobility and access along the roadway. They are derived based upon

average conditions and should be revised to account for special circumstances, such as reduced lane width, extreme grades and the provision of access improvements including turn lanes and acceleration/deceleration lanes. It should also be noted that, although not proportional to peak hour traffic volumes, the 24 hour ADT is often related to the peak hour volume. When the 24-hour volume is significantly increased, the peak hour volume is also typically significantly increased.

The following statements characterize LOS along arterials and collectors:

LOS A describes primarily free flow operations. Vehicles are completely unimpeded in their ability to maneuver into and within the traffic stream. Average travel speeds are approximately 90 % of the free flow speed. The free flow speed is the theoretical speed of traffic when no vehicles are present.

LOS B describes reasonably unimpeded traffic operations. The ability to maneuver into and within the traffic stream is only slightly restricted. Average travel speeds are approximately 70 % of the free flow speed.

LOS C describes stable operations. The ability to maneuver and change lanes in midblock locations may be more restricted than at LOS B. Average travel speeds are approximately 50 % of the free flow speed.

LOS D borders on a range in which small increases in flow may cause substantial increases in delay and decreases in travel speed. The ability to maneuver into and within the traffic stream is limited with slight and infrequent delay. Average travel speeds are approximately 40 % of the free flow speed.

LOS E is characterized by significant delays. The ability to maneuver into and within the traffic stream is extremely limited. Average travel speeds are approximately 33 % or less than the free flow speed.

LOS F is characterized by high delays. Average travel speeds are extremely low with stop-and-go traffic or excessive queuing.

The highest volume attainable under LOS E defines the capacity of the arterial or collector. Operating conditions at capacity are unstable and difficult to predict. If this capacity is exceeded, operating conditions on the roadway change dramatically. Average travel speeds are extremely low, stop-and-go traffic occurs and excessive queuing may be present. Generally, the highest LOS E capacity for County arterials and collectors is identified in Table 1 of the County of San Diego Public Road Standards.

Residential Roads

Residential roads are provided to collect traffic from adjacent residential areas and lots. Their primary purpose is to provide a limited residential area access to and from the regional road network. Such roads are not envisioned to provide through traffic generated in one community and destined for another. They are designed to accommodate local traffic.

Levels of service are not applied to residential roads. Due to the abutting and surrounding residential land uses, reduced traffic volumes are desired in order to minimize real and or perceived impacts to the adjacent uses. Residential roads are targeted to serve between 1,500 and 4,500 average daily trips (ADT). The County also has some special residential roads, which include frontage, alley and hillside residential. Due to the unique nature of these roads traffic may be less than 1500 ADT. Traffic volumes in excess of these targets may be accepted if other means of access to an area is precluded or found to be impractical due to such factors as environmental impacts, engineering, and no other legal access for an area.

Industrial/Commercial Roads

Industrial/Commercial roads provide access to abutting lots zoned for industrial and commercial uses. Their primary purpose is to provide a limited industrial/commercial area access to and from the regional road network. Such roads are not envisioned to provide through traffic generating in one community and destined for another. They are designed to accommodate a high percentage of trucks.

Levels of service are not applied to industrial/commercial roads. Due to the abutting and surrounding industrial/commercial land uses, reduced traffic volumes are desired in order to minimize real and or perceived impacts to the adjacent uses. Two-lane industrial/commercial roads are targeted to serve and 4,500 average daily trips. Four lane industrial/commercial roads are recommended for traffic volumes greater than 4,500 ADT. Traffic volumes in excess of 4,500 ADT may be accepted on two lane industrial/commercial road adequate abutting lot access improvements are provided or other means of access to an area is precluded or found to be impractical due to such factors as environmental impacts, engineering, and no legal access.

Intersections

Levels of service for intersection are estimated based upon the procedures provided in the HCM 2000. The HCM includes procedures for the analysis of signalized and unsignalized intersections. Capacity and traffic analysis focus on the peak hour of traffic volume, because it represents the most critical period for operations and has the highest capacity requirements. Since the flow rate can fluctuate substantially within the peak hour, assessments based upon the peak 15-minute flow rate are used. A discussion of these procedures is provided below.

Signalized Intersections

The analysis of signalized intersection is based upon a wide variety of prevailing traffic, roadway and signalization conditions. Traffic conditions include volumes on each approach, distribution of vehicles by movement (left, through, right), the vehicle type distribution, pedestrian cross flows and other factors. Roadway conditions include basic geometrics of the intersection, such as the number and width of through lanes, the number and width of turn lanes, grades and adjacent parking lanes. Signalization conditions include signal phasing, timing, type of control and other factors.

The maximum capacity at signalized intersections is defined for each lane group. The lane group capacity is the maximum hourly rate of vehicles that can reasonably pass through the intersection. The flow rate is generally measured for a 15 min period and is stated in vehicles per hour (veh/hr). Capacity is evaluated in terms of the ratio of demand flow rate to maximum capacity (v/c ratio).

In the HCM methodology the capacity, LOS, and other performance measures are estimated for lane groups and intersection approaches. The overall LOS is also estimated for the intersection as a whole. The methodology, however, does not take into account the potential impact of downstream congestion of the intersection. Nor does the methodology detect and adjust for the impacts of left turn pocket overflows on through traffic and intersection operation.

Levels of service for signalized intersections are defined in terms of control delay, which is a measure of driver discomfort, frustration, fuel consumption and increased travel time. The delay experienced by a motorist is made up of a number of factors that relate to control, geometrics, traffic and incidents. Although the control delay is estimated based upon a number of variables, for a given set of signal conditions the v/c ratio is a lead parameter of control delay. LOS for signalized intersections are estimated based upon a calculation of the v/c ratio, which is used with other factors to estimate the control delay.

Levels of service for signalized intersections are defined to represent reasonable ranges in control delay as follows:

LOS A describes operations with low control delay, up to 10 sec/vehicle. Many vehicles do not stop at all.

LOS B describes operations with control delay greater than 10 and up to 20 sec/vehicle. More vehicles stop than at LOS A, causing higher levels of control delay.

LOS C describes operations with control delay greater than 20 and up to 30 sec/vehicle. Individual cycle failures may begin at this level. Cycle failures occur when a given green phase does not serve all queued vehicles and overflows occur. The number of vehicles stopping is noticeable, though many still pass through the intersection without stopping.

LOS D describes operations with control delay greater than 35 and up to 55 sec/vehicle. At LOS D the influence of congestion becomes more noticeable. Many vehicles stop and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.

LOS E describes operations with control delay greater than 55 and up to 80 sec/vehicle. Individual cycle failures are frequent.

LOS F describes operations with control delay greater than 80 sec/vehicle. This level is considered unacceptable to most drivers. It often occurs when the arrival flow rates exceed the capacity of lane groups. Many individual cycles fail.

Unsignalized Intersections

Two-Way Stop-Controlled Intersections (TWSC)
Levels of service procedures are provided in the HCM for two-way stop-controlled (TWSC) intersections. Level of service for TWSC intersections is determined by estimating the control delay for each minor movement. The delay is estimated by determining the amount of available acceptable gaps for a driver to maneuver from and to the minor street. LOS is not defined for the intersection as a whole.

The LOS criteria for TWSC intersections are somewhat different from that of signalized intersections primarily because of different driver perceptions. The expectation is that a signalized intersection is designed to carry higher traffic volumes and experience greater delay than unsignalized intersections. LOS F occurs when there are not enough gaps of sufficient size to allow the minor street demand to safely cross through traffic on the major street. This is typically evident by extremely long control delays experienced by minor-street traffic. Drivers on the minor street may also start accepting smaller than usual gaps. In such cases safety may be a problem and some disruption of the major street traffic may occur.

All-Way Stop-Controlled Intersections (AWSC)
Levels of service procedures are provided in the HCM for all-way stop-controlled (AWSC) intersections. Level of service for AWSC intersections is determined by estimating the control delay per vehicle for each lane and each approach. The LOS for each approach and for the intersection as a whole is then estimated by computing weighted averages of the delay.

The LOS criteria for TWSC intersections are similar to that of signalized intersections. The criteria for LOS for AWSC intersections, however, have different threshold values than that for signalized intersections. The expectation is that a signalized intersection is designed to carry higher traffic volumes and experience greater delay than unsignalized intersections. A higher level of control delay is acceptable at a signalized intersection for the same LOS.

Roundabouts

The HCM manual includes procedures to estimate the capacity of single-lane roundabouts. It, however, does not include procedures for estimating the LOS of a roundabout. The capacity analysis is based upon gap acceptance techniques. The procedures are not applicable to multilane roundabouts. More details regarding the use and experience of roundabouts in the Untied States are needed before an analysis procedure for multilane roundabouts will be provided in the HCM.

TABLE 1

AVERAGE DAILY VEHICLE TRIPS

CIRCULATION ELEMENT ROADS		LEVEL OF SERVICE				
CLASS	**X-SECTION**	**A**	**B**	C	D	E
Expressway	126/146	<36,000	<54,000	<70,000	<86,000	<108,000
Prime Arterial	102/122	<22,200	<37,000	<44,600	<50,000	<57,000
Major Road	78/98	<14,800	<24,700	<29,600	<33,400	<37,000
Collector	64/84	<13,700	<22,800	<27,400	<30,800	<34,200
Town Collector	54/74	<3,000	<6,000	<9,500	<13,500	<19,000
Light Collector	40/60	<1,900	<4,100	<7,100	<10,900	<16,200
Rural Collector	40/84	<1,900	<4,100	<7,100	<10,900	<16,200
Rural Light Collector	40/60	<1,900	<4,100	<7,100	<10,900	<16,200
Recreational Parkway	40/100	<1,900	<4,100	<7,100	<10,900	<16,200
Rural Mountain	40/100	<1,900	<4,100	<7,100	<10,900	<16,200

NON – CIRCULATION ELEMENT ROADS		LEVEL OF SERVICE				
CLASS	**X-SECTION**	A	B	C	D	E
Residential Collector	40/60	*	*	<4,500	*	*
Residential Road	36/56	*	*	<1,500	*	*
Residential Cul-de-sac or Loop Road	32/52	*	*	< 200	*	*

*Levels of service are not applied to residential streets since their primary purpose is to serve abutting lots, not carry through traffic. Levels of service normally apply to roads carrying through traffic between major trip generators and attractors.

LEVEL OF SERVICE (LOS) DEFINITIONS (generally used by Caltrans)

The concept of Level of Service (LOS) is defined as a qualitative measure describing operational conditions within a traffic stream, and their perception by motorists and/or passengers. A Level of Service[5] definition generally describes these conditions in terms of such factors as speed, travel time, freedom to maneuver, comfort and convenience, and safety. Levels of Service definitions can generally be categorized as follows:

LOS	D/C*	Congestion/Delay	Traffic Description
		(Used for freeways, expressways and conventional highways[A])	
"A"	<0.41	None	Free flow.
"B"	0.42-0.62	None	Free to stable flow, light to moderate volumes.
"C"	0.63-0.79	None to minimal	Stable flow, moderate volumes, freedom to maneuver noticeably restricted.
"D"	0.80-0.92	Minimal to substantial	Approaches unstable flow, heavy volumes, very limited freedom to maneuver.
"E"	0.93-1.00	Significant	Extremely unstable flow, maneuverability and psychological comfort extremely poor.
		(Used for conventional highways)	
"F"	>1.00	Considerable	Forced or breakdown. Delay measured in average flow, travel speed (MPH). Signalized segments experience delays >60.0 seconds/vehicle.
		(Used for freeways and expressways)	
"F0"	1.01-1.25	Considerable 0-1 hour delay	Forced flow, heavy congestion, long queues form behind breakdown points, stop and go.
"F1"	1.26-1.35	Severe 1-2 hour delay	Very heavy congestion, very long queues.
"F2"	1.36-1.45	Very severe 2-3 hour delay	Extremely heavy congestion, longer queues, more numerous breakdown points, longer stop periods.
"F3"	>1.46	Extremely severe 3+ hours of delay	Gridlock.

[5] Level of Service can generally be calculated using "Table 3.1. LOS Criteria for Basic Freeway Sections" from the latest Highway Capacity Manual. However, contact Caltrans for more specific information on determining existing "free-flow" freeway speeds.

* Demand/Capacity ratio used for forecasts (V/C ratio used for operational analysis, where V = volume)

[A] Arterial LOS is based upon average "free-flow" travel speeds, and should refer to definitions in Table 11.1 in the HCM.

[Attachment B]

DEFINITIONS OF KEY TERMS

Traffic Terms

Level of Service (LOS) corresponds to "excellent" through "failure" conditions in terms of traffic congestion, both for road segments and for intersections. It is used to provide an indication of the amount of delay a driver would experience along a road segment or the amount of wait time a driver would experience at an intersection. *LOS* is rated on a scale of A through F, with A representing excellent, free flow conditions, and F representing failures of road segments or intersections.

Volume to Capacity (V/C) Ratio is ratio of the actual traffic volume of a road segment or intersection to the design capacity of the road segment or intersection. It is used to provide an estimate of the level of service of the road segment or intersection.

AM or PM Peak Hours are those hours of the day in which the bulk of commute trips occur and in which traffic impacts are likely to be the greatest.

Average Daily Traffic (ADT) is the number of vehicles that use a roadway segment within a 24-hour period.

Capacity of a transportation facility is the maximum number of persons or vehicles that can be expected to traverse a point or uniform section of road within a specified time frame under prevailing roadway, traffic and control conditions. Theoretically, this is the point in which the flow rate (vehicles/hour) on the facility is the highest. The highest volume attainable under LOS E has been designated as the capacity of the arterial or collector.

Parking Terms

The following list highlights several key parking terms that are defined in the Zoning Ordinance:

Parking Area: An open area, other than a street or alley, which contains motor vehicle parking spaces.

Parking Space: An unobstructed space or area other than a street or alley, not less than the minimum size specified for the type of use provided with adequate ingress and egress, and which is permanently reserved and maintained for the parking of motor vehicles.

Covered Parking: Covered or enclosed parking spaces located anywhere on a building site where a structure may be located.

Loading Space: An area, other than a street or alley on the same lot with a building or a group of buildings not less than 10-feet wide, 35-feet long, and 14-feet high which affords adequate ingress and egress for trucks from a public street or alley, and which is permanently reserved and maintained for the temporary parking of commercial vehicles while loading or unloading merchandise or materials. Loading and unloading shall not obstruct access to any parking space.

Off-Street Parking: A facility/area for vehicle parking located outside of a public street right-of-way.

Open Parking: Open parking spaces are spaces located outside the ultimate right-of-way of any street.

COUNTY OF SAN DIEGO

REPORT FORMAT & CONTENT REQUIREMENTS

TRANSPORTATION AND TRAFFIC

LAND USE AND ENVIRONMENT GROUP

Department of Planning and Land Use
Department of Public Works

September 26, 2006

PURPOSE

These Transportation & Traffic Report Format and Content Requirements provide guidance on conducting traffic impact studies and preparing reports for discretionary projects being processed by the Land Use and Environment Group. These guidelines are designed to:

1. Ensure the quality, accuracy and completeness of traffic impact studies and reports.

2. Aid in staff's efficient and consistent review of maps and documents from different consultants.

3. Provide adequate information to make appropriate planning decisions and to make determinations regarding conformance with applicable regulations.

4. Increase the efficiency of the environmental review process and avoid unnecessary time delays.

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1.0 INTRODUCTION

The purpose of a traffic impact study is to evaluate potential project level and cumulative traffic impacts that may result from a proposed project. Substantial traffic volume increases on roadways or intersections may cause congestion at existing or future roads and intersections. Traffic volume increases may occur from trips generated by the proposed project or a redistribution of traffic that would result from the proposed project. A detailed analysis of the traffic generated or redirected by a proposed project, assessment of potential impacts, and identification of mitigation measures for significant traffic impacts are the main focus of a traffic impact study.

For all discretionary development and public works projects, County staff will evaluate the need for a Traffic Impact Study (TIS). Guidelines for determining when and the type of traffic study are provided in Section 2.1 below. These are intended to serve as a guideline and are not intended to replace sound traffic engineering judgment. The analysis of traffic issues, evaluation of traffic impacts, and development of mitigation measures for traffic impacts are complex tasks. The type and scope of a traffic impact study will vary based upon the size of a project, its location and other factors. Typically, a traffic impact study will include several components as outlined in Section 3.1.

2.0 TRAFFIC IMPACT STUDY GUIDANCE

Under CEQA, traffic impacts will be evaluated for every discretionary land use project, however not all project require a TIS. The different types of traffic impact studies and the typical criteria that trigger them are discussed below:

2.1 Criteria for Need to Prepare & Types of Traffic Impact Studies

All discretionary projects and public works projects are required to be evaluated to determine the potential for project-level (direct) or cumulative traffic impacts that may result from implementation of the proposed project. Table 1 below, highlights the typical criteria used (based on ADTs) to determine if a TIS is required and what type of TIS is most appropriate. Figure 1 - Significant Project Traffic Impact Assessment Flow Chart is also a useful tool for assessing traffic impacts.

Table 1 - County Criteria for the Need To Prepare a Traffic Impact Study (TIS)

PROJECT GENERATED TRAFFIC*	FOCUSED TIS	FULL TIS NEEDED	CONGESTION MANAGEMENT ANALYSIS NEEDED
Less than 200 Average Daily Trips OR Less than 20 Peak Hour Trips	No	No	No
500 Average Daily Trips OR 50 Peak Hour Trips	Yes	No	No
1,000 Average Daily Trips OR 100 Peak Hour Trips	No	Yes	No
2,400 Average Daily Trips OR 200 Peak Hour Trips	No	Yes	Yes

***** Other situations could result in a request for an Issue Specific or Focused Traffic Impact Study. These include, but are not limited to, those issues addressed in this report.
NOTE: Analysis of cumulative traffic impacts may require a Traffic Impact Study, even when project generated traffic volumes alone do not.

2.1.1 Issue Specific Traffic Impact Study

Generally, an issue specific TIS will be required for projects that generate between 200 and 500 average daily trips (ADT) or between 20 and 50 peak hour trips that may potentially impact or alter the design of a nearby intersection or road segment. Typically, the scope of an issue specific traffic study is limited to nearby roads receiving over 200 ADT (100 ADT is adjacent road is operating at LOS F) and intersections receiving over 20 peak hour trips (5 peak hour trips on a critical move for an adjacent intersection operating at LOS F). County staff may also based upon a field review, public comment, or recommendations of a planning group require an issue specific TIS to address particular traffic issues. For example, an examination of available sight distance, driveway access, access road geometrics and capacity, parking capacity, intersection analysis or a signal timing study are issue specific/focused studies that could be required.

All discretionary projects are required to evaluate project-level (direct) and cumulative traffic impacts that may include preparation of a TIS. When a proposed project generates less than 200 average daily trips (ADT), in most cases (given the distribution of traffic onto County Circulation Element roads and the traffic impact thresholds

identified in Table 1), the proposed project will not result in direct traffic impacts. If the proposed project distributes over 100 ADT onto a County Circulation Element Road operating at LOS F, however, a direct impact may be identified. Improvements to mitigate the added delay caused by the project would need to be identified. A traffic assessment to assist in the identification of appropriate mitigation may be required.

When the applicant/proposed project participates fully in the County's TIF program, no additional cumulative traffic impact assessment will be required unless the proposed project is adjacent to or nearby another local jurisdiction where the potential for direct or cumulative traffic impacts exists. If the proposed project is located adjacent to another jurisdiction or in close proximity to a freeway ramp, additional cumulative traffic impacts outside the unincorporated area and not identified in the County's TIF program may occur. The applicant should coordinate with those jurisdictions or agencies regarding any potential need for traffic studies or mitigation.

2.1.2 Focused Traffic Impact Study (TIS)

A focused TIS shall be prepared for all discretionary projects that generate between 500 and 1,000 total average daily trips (ADT) or between 50 and 100 peak-hour trips. The focused TIS shall assess potential traffic impacts to nearby local roads (streets) and intersections. The scope of the assessment of direct traffic impacts should include the assessment of transportation facilities that would receive 25 or more peak hour trips from the proposed project. Other criteria for determining whether a focused traffic analysis is required may include the following:

- The proposed project includes a driveway to be located on a Circulation Element Road within 150 feet of an intersection with another Circulation Element Road.

- The proximity of transportation facilities currently operating at LOS E or F.

- The project includes a driveway that intersects an on-street bicycle lane or crosswalk in an area of high pedestrian activity.

- There are access risks or deficiencies associated with the adjoining street system due to curves, slopes, walls or other barriers to adequate lines of sight.

- The proposed project will result in a road alignment or design, which is inconsistent with the General Plan or community plan for the area or does not align with adjoining or proposed roads.

When the applicant/proposed project participate fully in the County's TIF program, only a focused cumulative traffic impact assessment will be required. Per the TIF Ordinance, the County may require a developer to install improvements with supplemental size, length, or capacity in order to ensure efficient and timely construction of the transportation facilities network. The focused cumulative traffic assessment will aide in this determination. When required the scope of the cumulative traffic assessment

should include the same intersections and roads that were assessed in the direct portion of the traffic study. In addition, if the proposed project is located adjacent to another jurisdiction or in close proximity to a freeway ramp, additional cumulative traffic impacts out side the unincorporated area and not identified in the County's TIF program may occur. The applicant should coordinate with those jurisdictions or agencies regarding any potential need for traffic studies or mitigation.

When the applicant/proposed project does not fully participate in the County's TIF Program a full, complete and detailed cumulative traffic assessment will be required. Scoping of the detailed cumulative traffic assessment will extend beyond the 25 peak hour trip limit specified above and should include all roads and intersections that may be cumulatively impacted by the proposed project. The detailed cumulative traffic analysis must be based upon the summary of projects approach and include an assessment forecast of the traffic volumes and impacts that would result from build-out of the general land uses/projects that would be constructed in the future.

2.1.3 Full Traffic Impact Study (TIS)

A full TIS shall be prepared for all discretionary projects that generate 1,000 or more total average daily trips (ADT) or 100 or more peak-hour trips. The full TIS shall assess potential impacts to regional arterials and state highways in addition to the potential impacts to nearby local roads (streets) and intersections.

A Congestion Management Program (CMP) analysis is required for all large projects, which are defined as generating 2,400 or more average daily trips or 200 or more peak-hour trips. Computerized long-range forecasts and select zone assignments are required by the CMP for these large projects to aide in the determination of the proposed project's trip distribution. In addition, Caltrans may require a TIS when a proposed project will likely generate or redirect traffic that impacts a State highway or freeway (especially entrance and exit ramps). Please refer to the flow chart (Figure 1) for TIS requirements.

The geographic area examined in the full TIS or CMP analysis should include the following:

- Local roads and intersections as determined through coordination with the local planning group and County staff. Typically, this will include the access roads and the intersection of local roads with a Circulation Element road.

- All regional arterials (including all State surface routes), intersections, and mainline freeway locations where the proposed project will add 50 or more peak-hour trips in either direction to the existing roadway traffic.

- Freeway entrance and exit ramps as determined by coordination with Caltrans. These are defined as entrance and exit ramps that are currently experiencing a 15-min delay, which, combined with the proposed project, will add 20 or more peak hour trips to the ramp. (NOTE: Care must be taken to include other ramps and intersections that may receive project traffic diverted as a result of already existing, or projected congestion at freeway entrances and exits.)

All full traffic impact studies shall include a cumulative traffic assessment that evaluates the near-term cumulative traffic impacts of the proposed project. The scope of the full cumulative traffic assessment shall include those roads and intersections that will receive 25 peak hour trips. Roads and intersections in the vicinity of the proposed project that are operating at LOS E or F may require additional analysis if they were not addressed in the County's TIF Program. Per the County's TIF Ordinance, the County may require a developer to install improvements with supplemental size, length, or capacity in order to ensure efficient and timely construction of the transportation facilities network. The full cumulative traffic assessment will aide in this determination. The full cumulative traffic assessment will also allow for more detailed discussion of the projects potential traffic impacts during public review and in any environmental documents that are prepared for the proposed project. If the proposed project is located adjacent to another jurisdiction or in close proximity to a freeway ramp, additional cumulative traffic impacts out side the unincorporated area and not identified in the County's TIF program may occur. The applicant should coordinate with those jurisdictions or agencies regarding any potential need for traffic studies or mitigation.

If an applicant/proposed project chooses not to fully participate in the County's TIF Program a full, a complete and detailed cumulative traffic assessment will be required. Scoping of the cumulative traffic assessment will extend beyond the 25 peak hour trip limit specified above and should include all roads and intersections that may be cumulatively impacted by the proposed project. The detailed cumulative traffic analysis must be based upon the summary of projects approach and include an assessment forecast of the traffic volumes and impacts that would result from build-out of the general land uses/projects that would be constructed in the future.

2.1.4 Traffic Impact Study for Projects Proposing to Amend the County's General Plan

Projects that propose changes to the County's General Plan or zoning and that will increase the density or intensity of development above that of the adopted General Plan must prepare a plan-to-plan analysis. The plan-to-plan analysis must assess potential impacts to the County's General Plan Circulation Element Roads at build-out of the County's General Plan. Projects that include near-term development and propose a change to the County's General Plan or existing zoning must provide an overall analysis assessing existing, cumulative and build-out conditions

2.1.5 Traffic Impact Study for a Publicly Initiated Road Improvement Project

Publicly initiated road improvement projects do not, in themselves, generate additional trips. They may, however, cause a redistribution of trips on the local or regional road network. Whenever the proposed road improvement project redistributes 500 or more average daily trips or 50 or more peak hour trips, a focused or full TIS shall be prepared as per the criteria outlined above. A separate or communal traffic needs assessment may also be performed to help establish the purpose and need of the road improvement project.

2.2 Traffic Impact Study Methodology

Evaluations of traffic safety impacts and hazards to pedestrians or bicyclists shall be based upon a field review and the collection of both qualitative and quantitative data. An evaluation of compliance with the County of San Diego Public Road Standards and the San Diego County Standards for Private Streets may be made. These standards allow the Director of Public Works to grant exceptions to these standards if needed. If an exception is granted, then the provisions and criteria outlined in the exception shall apply. When applicable, a summary of existing accident data on a road segment or at an intersection may also be provided.

Levels of Service for arterial road segments may be estimated on an ADT/24-hour traffic volume basis. Table 1 (page 9) of the County of San Diego Public Road Standards may be used for roads located within the unincorporated area of San Diego County. Similar LOS Tables from the appropriate local jurisdiction should be used for local roads outside of the unincorporated area. Upon concurrence with County staff, Highway Capacity Manual (HCM) analysis methods may be used for specified arterials.

The County of San Diego Public Road Standards includes a table which establishes levels of service for County Circulation Element roads based upon average daily trips. This table shall be used in determining the level of service for County Circulation Element roads. The Highway Capacity Manual (HCM) includes analysis criteria for the assessment of the level of service for two-lane highways. The Director of Public Works may, based upon a review of the operational characteristics of the roadway, designate that a HCM analysis be used to determine the level of service for a two-lane County arterial in lieu of the level of service table provided in the County of San Diego Public Road Standards.

In determining the level of service for road segments and intersections outside of the County of San Diego's jurisdiction, the level of service standards for the jurisdiction or agency (Caltrans) shall be used. Early coordination with the affected jurisdiction or agency (Caltrans) should be conducted during the preparation of the traffic impact study.

All level of service measurements for intersections and State highways shall be based upon HCM procedures for peak-hour conditions. The following methodologies for TIS analysis should be used (unless early consultation with the lead agency and Caltrans has established other methods), along with some suggested software packages and options:

- Arterials, Multi-lane and Two-lane Highways, and all other Local Streets - current Highway Capacity Manual [HCM]: w/Highway Capacity Software [HCS].

- Signalized Intersections – HCM: w/HCS, TRAFFIX, SigCinema, and SYNCHRO acceptable to Caltrans; and, HCS, TRAFFIX, SIGNAL 94, and NCAP acceptable to local jurisdictions.

- Unsignalized Intersections – HCM.

- Freeway Segments – HCM or Caltrans District 11 freeway LOS definitions (refer to Attachment A of the Guidelines for Determining Significance for Transportation and Traffic).

- Freeway Weaving Areas – Caltrans Highway Design Manual (Chapter 500).

- Freeway Ramps – Caltrans District 11 Ramp Metering Analysis (Attachment A), and Caltrans Ramp Meter Design Guidelines (August 1995), HCS (for ramp design only).

- Freeway Interchanges – HCM: for diamond interchanges where the timing and phasing of the two signals must be coordinated to ensure queue clearances, consider Passer III-90.

- Transit, Pedestrians, and Bicycles – HCM.

- Warrants for Traffic Signals, Stop Signs, School Crossings, Freeway Lighting, etc. – Manual For Uniform Traffic Control Devices (MUTCD) and California Supplement.

- Channelization and Intersection Geometry - Caltrans' Traffic Manual and Guidelines for Reconstruction of Intersections, City of San Diego's Traffic Impact Study Manual -Appendix 4.

Note: Neither the County nor Caltrans officially advocate the use of any special software packages, especially since new ones are being developed all the time. However, consistency with the Highway Capacity Manual (HCM) is advocated in most cases. The above-mentioned software packages have been utilized locally. Because it is so important to have consistent end results, always consult with all affected jurisdictions, including Caltrans, regarding the analytical techniques and software being considered (especially if they differ from above) for the TIS.

3.0 REPORT FORMAT REQUIREMENTS

A thorough traffic impact study (TIS) will consider the potential effects of all aspects of a project (including all potential on- and off-site transportation impacts and improvements). The study should identify whether impacts are direct or cumulative in nature, determine whether the impacts are significant and proposed mitigation measures for any identified impacts. Direct traffic impacts are those that are caused by and immediately related to the project. Cumulative traffic impacts are traffic impacts that would result from traffic generated or redirected by the proposed project and past, present or future projects.

3.1 Typical Traffic Impact Study Outline

The required sections of a typical TIS are provided in the outline/Table of Contents below:

COVER PAGE

TABLE OF CONTENTS (Including a list of tables, maps & figures)

GLOSSARY OF TERMS AND ACRONYMS

EXECUTIVE SUMMARY

1.0 INTRODUCTION

- **1.1 Purpose of the Report**
- **1.2 Project Location and Description**
  (Including map of proposed project location & map of TIS Study Area; discuss construction and/or operational traffic, if applicable)
- **1.3 Summary of Significance Criteria**
- **1.4 Congestion Management Program Requirements** (if applicable)

2.0 EXISTING CONDITIONS

- **2.1 Existing Transportation Conditions**
- **2.2 Existing Parking, Transit, & On-site Circulation**

3.0 PROJECT IMPACT ANALYSIS

- **3.1 Analysis Methodology**
- **3.2 Project Trip Generation**
- **3.3 Project Trip Distribution**
- **3.4 Existing + Project Conditions**

3.5 Near-Term + Existing Conditions
3.6 Near-Term + Existing + Project Conditions
3.7 Horizon Year (if applicable)
3.8 Horizon Year Transportation + Proposed Project Conditions
3.9 Ramps (if applicable)
3.10 Congestion Management Plan (if applicable)
3.11 Hazards due to an Existing Transportation Design Feature (if applicable)
3.12 Hazards to Pedestrians or Bicyclists (if applicable)
3.13 Parking Capacity (if applicable)
3.14 Alternative Transportation (if applicable)
3.15 Project Access and On-Site Circulation

4.0 IMPACT SUMMARY

4.1 Impact Summary Table
4.2 Road Segments
- **4.2.1 Guidelines for the Determination of Significance**
- **4.2.2 Significance of Impacts Prior to Mitigation**
- **4.2.3 Mitigation Measures and Design Considerations**
- **4.2.4 Conclusions**

4.3 Intersections (Signalized & Unsignalized)
- **4.3.1 Guidelines for the Determination of Significance**
- **4.3.2 Significance of Impacts prior to Mitigation**
- **4.3.3 Mitigation Measures and Design Considerations**
- **4.3.4 Conclusions**

4.4 Ramps (if applicable)
- **4.4.1 Guidelines for the Determination of Significance**
- **4.4.2 Significance of Impacts prior to Mitigation**
- **4.4.3 Mitigation Measures and Design Considerations**
- **4.4.4 Conclusions**

4.5 Congestion Management Plan (if applicable)
- **4.5.1 Guidelines for the Determination of Significance**
- **4.5.2 Significance of Impacts prior to Mitigation**
- **4.5.3 Mitigation Measures and Design Considerations**
- **4.5.4 Conclusions**

4.6 Hazards Due To An Existing Transportation Design Feature (if applicable)
- **4.6.1 Guidelines for the Determination of Significance**
- **4.6.2 Significance of Impacts prior to Mitigation**
- **4.6.3 Mitigation Measures and Design Considerations**
- **4.6.4 Conclusions**

4.7 Hazards To Pedestrians Or Bicyclists (if applicable)
- **4.7.1 Guidelines for the Determination of Significance**
- **4.7.2 Significance of Impacts prior to Mitigation**
- **4.7.3 Mitigation Measures and Design Considerations**

4.7.4 Conclusions

4.8 Parking Capacity (if applicable)

4.8.1 Guidelines for the Determination of Significance

4.8.2 Significance of Impacts prior to Mitigation

4.8.3 Mitigation Measures and Design Considerations

4.8.4 Conclusions

4.9 Alternative Transportation (if applicable)

4.9.1 Conclusion

5.0 SUMMARY OF RECOMMENDED PROJECT DESIGN FEATURES, IMPACTS & MITIGATION (Include project access and on-site circulation)

6.0 REFERENCES

7.0 LIST OF PREPARERS AND PERSONS AND ORGANIZATIONS CONTACTED

TECHNICAL ATTACHMENTS (order will be determined by reference in report)

3.2 General Content Guidance

Cover Page

The cover page shall include the following information:

- Project common name
- Project numbers (i.e. TM, ZAP, etc.) including the environmental log number (ER)
- Date (original report date plus all revisions) must be revised during each iteration of the draft report)
- Name of County Approved CEQA Consultant preparing document, firm name (if applicable) and address
- Signature of County Approved CEQA Consultant
- Project proponent's name and address
- The following statement: Prepared for The County of San Diego

Table of Contents (Including a list of tables, maps & figures)

The table of contents should follow the recommended order and format outlined in this document. Page numbers should be assigned when possible especially to all the pertinent tables and figures. Titles of each attachment/appendix should be listed in the order in which they are referenced in the document.

Glossary of Terms and Acronyms

Provide a list of terms and acronyms used in the study.

Executive Summary

Provide a brief summary of the project, the potential impacts and proposed mitigation. No new information should be provided in the summary that is not further explained elsewhere in the document. The purpose of the summary is to provide a quick reference for the public and decision-makers. Therefore, the language should be less technical than that used in the remainder of the document.

Existing Conditions

Documentation of the existing traffic volumes, levels of service, and geometrics for roads and intersections that may be potentially impacted by the proposed project must be provided. This assessment is typically based upon traffic counts that are less than two years old, unless it can be demonstrated that traffic volumes have not significantly changed since the prior counts were taken. The study should include the following:

- Figure identifying roadway conditions including raised medians, median openings, separate left and right turn lanes, roadway and intersection dimensions, bike lanes, parking, number of travel lanes, posted speed.
- Figure indicating the daily (ADT) and peak-hour volumes.
- Figure or table showing level of service (LOS) for intersections during peak hours and roadway sections within the study area (include analysis sheets on an appendix).

Analysis Methodology

See Section 2.2 above.

Trip Generation

Estimates of the number of trips that will be generated by the proposed project must be provided. Typically, SANDAG's Brief Guide of Vehicular Traffic Generation rates for the San Diego Region is used to prepare this estimate. Where a specific project is not defined in the Brief Guide then rates recommended by the Institute of Traffic Engineers or detailed case studies may be used to establish the trip rate assumption. The study should include the following:

- Table showing the calculated project generated (ADT) and peak hour volumes.

Trip Distribution

The assignment of the estimated trips generated by the project or redistribution of existing traffic onto the existing and, if applicable, future road networks must be provided. For small projects this is typically done manually based upon traffic engineering judgment. For large projects, trips are distributed onto the road network based upon SANDAG's regional forecasting model, by using a select zone assignment. Per the CMP, large projects must distribute project trips based upon a computer model approved by SANDAG. This is typically, the SANDAG Regional model.

The study should include the following:

- Project Trip Distribution using the current Regional Computer Traffic Model (provide a computer plot) or manual assignment if previously approved. (Identify which method was used.)
- Traffic signal warrant analysis (Caltrans Traffic manual) for appropriate sections.

Site Access

Project site access is analyzed in quantitative or qualitative terms, in conjunction with a review of internal site circulation and access to parking areas. In addition, peak hour LOS may be quantified for primary access points, using the procedures outlined herein. Conflicts that may be created by driveway configuration, placement of the driveway in areas of poor visibility, that are close or adjacent to bicycle or pedestrian facilities or in close proximity to busy or congested intersections should be identified. Conflicts with or restrictions of access to publicly or privately owned land should also be identified.

Assessment of adequate primary and secondary access to the project site will be made in coordination with the local fire protection district and where warranted other emergency response agencies, such as the Sheriff and California Highway Patrol. Documentation and assessment of existing road and intersection geometry may be required to verify whether adequate access may be required. If deficiencies are identified recommendations to correct any deficiencies must be made.

The TIS analysis shall determine the effect that a project will have for each of the previously outlined study scenarios. Peak-hour capacity analyses for freeways, roadway segments (ADTs may be used in lieu of V/C ratios), intersections, and freeway ramps must be conducted for both the near-term and long-term conditions. The methodologies used in determining the traffic impact are not only critical to the validity of the analysis; they are pertinent to the credibility and confidence the decision-makers have in the resulting findings, conclusions, and recommendations. Key assumptions made in the TIS should be documented in the report.

Project-Level & Cumulative Traffic Impacts

State CEQA Guidelines requires that environmental assessments, which include a TIS, take into account the “whole of the action” involved, including on-site, off-site, construction, and operational impacts. This requires impact assessments to evaluate project-level and cumulative impacts.

Project Level

Project-level impacts are impacts that would result solely from the implementation of the project. Since CEQA requires a plan to ground assessment, project impacts are typically evaluated by assessing the existing conditions with the proposed project in place against the existing conditions. Where it can be demonstrated that the proposed project will reasonably come on-line after the completion of nearby transportation projects an opening day assessment may also be required. Coordination with County staff is recommended to ensure that proper assumptions are used in the preparation of an opening day assessment. Project-level impacts would occur when the significance criteria outlined herein is exceeded

Cumulative

CEQA section 15130 provides guidance for assessment of cumulative impacts. Cumulative impact assessments should be based upon 1) a list of projects approach or 2) a General Plan summary of projects approach. The list of projects approach includes a list of past, present and probable future projects producing related or cumulative impacts (includes all projects and if necessary, those projects outside the control of the agency). The General Plan summary of projects approach includes a summary of projects contained in an adopted general plan or related planning document, or in a prior certified/adopted environmental document which described or evaluated regional or area wide conditions contributing to the cumulative impact.

Large projects may be required to provide both levels of evaluation.

Section 15130(a) of the State CEQA Guidelines state that cumulative impacts of a project should be discussed when the project's incremental effect, is considerable. Cumulatively considerable means that the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects. In evaluating cumulative traffic impacts two situations must be evaluated: 1) will build-out of all near term projects result in a cumulative traffic impact and 2) does the amount of traffic generated by the individual proposed project contribute (even in a small part) to that cumulative impact. Both conditions must be met for an individual project to result in a cumulative traffic impact.

If cumulative impacts are found to be significant, each project that contributes any trips must mitigate a share of the cumulative impacts. Specific mitigation measures must be identified to mitigate each cumulative traffic impact. Mitigation measures can be fairshare contributions toward scheduled Capital Improvement Projects or the construction of improvements that would mitigate the proposed project's cumulative traffic impacts.

When the applicant/proposed project participates fully in the County's TIF program, no additional cumulative traffic impact assessment will be required unless the proposed project is adjacent to or nearby another local jurisdiction where the potential for direct or cumulative traffic impacts exists. If the proposed project is located adjacent to another jurisdiction or in close proximity to a freeway ramp, additional cumulative traffic impacts out side the unincorporated area and not identified in the County's TIF program may occur. The applicant should coordinate with those jurisdictions or agencies regarding any potential need for traffic studies or mitigation.

In addition, if the applicant/proposed project does not fully participate in the County's TIF Program, a full, complete and detailed cumulative traffic assessment will be required and should include all roads and intersections that may be cumulatively impacted by the proposed project. The detailed cumulative traffic analysis must be based upon the summary of projects approach and include an assessment forecast of

the traffic volumes and impacts that would result from build-out of the general land uses/projects that would be constructed in the future.

Analysis of Potential Impacts

Detailed analysis of the potential traffic impacts, as detailed later in this document, must be provided. Direct and cumulative traffic impacts should be identified. This may necessitate the computation of the percentage of increase of trips at specified road segments or delay at intersections in addition to level of service calculations. More detailed analysis of specific potentially significant impacts may also be required. The following summary tables should be included:

- A summary table showing the comparison of Existing + Project, Existing + Proposed Project, Near-term Cumulative, Existing + Near Term Cumulative, Conditions.
- A summary table showing the project's "significant traffic impacts.

Scenarios to be Studied

An assessment of the proposed project's affects on existing conditions, cumulative conditions and at build-out conditions is required by CEQA. Existing conditions analysis assesses the affects the proposed project would have on the existing road infrastructure and network in the vicinity of the proposed project. The cumulative analysis assesses the affects of the proposed project with other planned development projects in the area. Where noted above, the cumulative traffic assessment may be based upon the County's overall TIF Program and reference this planning document or upon a detailed cumulative analysis based upon the General Plan summary of projects approach. Where a specific plan or the County General Plan includes a summary of projects and the cumulative impacts have previously been assessed and environmental documents certified, the TIS may reference the prior study and show conformity with the specific plan and certified environmental document. Build-out conditions assess the project's impacts to the County's General Plan road network (Circulation Element).

All of the scenarios that may be addressed in the TIS are described below:

Existing

Document existing traffic volumes and peak-hour levels of service in the study area. The existing deficiencies and potential mitigation should be identified.

Existing + Project

Analyze the impacts of the proposed project on top of existing conditions. The study should include the following:

- Figure indicating the daily (ADT) and peak-hour volumes.
- Figure or table showing the projected LOS for intersections during peak hours and roadway sections within the study area (analysis sheets included in the appendix.

Existing + Near-Term Cumulative

Analyze the cumulative condition impacts from "other" approved and "reasonably foreseeable" pending projects (application on file or in the pipeline) that are expected to influence the study area. This is the baseline against which project impacts are assessed. Agencies under which the projects are being developed should make available copies of the traffic studies for the "other" projects. If data is not available for near-term cumulative projects, an ambient growth factor should be used. An ambient growth factor is an estimate of the annual traffic increase in the area. This factor may be based upon a trend analysis of the population or traffic growth from the previous five years.

Existing + Near-Term Cumulative + Proposed Project

Analyze the impacts of the proposed project on top of existing conditions and the identified list of projects (along with their committed or funded mitigation measures, if any). The study should include the following:

- Figure or table showing the projected LOS for intersections during peak hours and roadway sections with the project (analysis sheets included in the appendix).
- Figure showing other projects that were included in the study, and the assignment of their site traffic.

Horizon Year

Identify Year 2030 traffic forecasts or 20-year future conditions through the output of a SANDAG model forecast or other computer model approved by the local agency (If the proposed project generated trips are at or below the trips consistent with the land uses represented in the model, a trip generation comparison may be all that is needed). Include the following in the study:

- Horizon Year ADT and street classification that reflect the Community Plan
- Figure or table showing the horizon LOS for intersections during peak hours and roadway sections with the project (analysis sheets included in the appendix.)

Horizon Year + Proposed Project

If the project land uses are more traffic intense than what was assumed in the horizon year model forecasts, analyze the additional project traffic impacts to the horizon year condition. When justified, and particularly in the case of very large developments or new general/community plans, a transportation model should be run with, and without, the additional development to show the net impacts on all parts of the area's transportation system.

For large projects, an opening day or other phasing scenarios may also be required.

For projects that propose to provide an independent cumulative traffic study in lieu of reliance on the County TIF Program traffic study and reports, a comprehensive cumulative traffic study must be provided. Due to the large number of ongoing near-term cumulative projects, extensive scope for a comprehensive list of project near-term cumulative analysis and difficulty to mitigate cumulative traffic impacts on an individual project-by-project basis, the County will typically rely on the General Plan summary of projects approach for assessment of cumulative traffic impacts. Build-out of the

County's General Plan for the area must be assessed and a plan to ground comparison be made to assess potential cumulative traffic impacts onto the existing County road network. Include the following in the study:

- Horizon Year ADT and street classification as shown in the Community Plan.
- Horizon Year ADT and street classification for two scenarios: with the proposed project and with the land use assumed in the Community Plan.
- Figure or table showing the horizon LOS for intersections during peak hours and roadway sections for two scenarios: with and without the proposed project and with the land use assumed in the Community plan (analysis sheets in the appendix).
- For General Plan Amendment projects provide a trip generation summary table. For projects more intense than the existing General Plan, provide a summary table of the Horizon Year analysis with and without the proposed project.

Identification of Mitigation Measures

Specific improvements to mitigate direct impacts must be identified. Fairshare contributions toward improvements will not mitigate a direct impact, The County has adopted a TIF program for the unincorporated area which may be utilized to mitigate cumulative traffic impacts of a proposed project. If cumulative traffic impacts have been identified on roads not included within the TIF program, a project may make a fairshare contribution toward cumulative traffic impacts where the County has a specifically approved capital improvement project, scheduled for completion. If a scheduled capital improvement project is not identified, then specific improvements must be constructed or other appropriate measures implemented to mitigate the cumulative traffic impacts. A list of potential mitigation measures is provided in Section 5.0 of the Guidelines for Determining Significance for Transportation & Traffic. The study should include the following:

- Whenever traffic signals are recommended as a mitigation measure, a traffic signal warrant analysis (Caltrans Traffic manual) must be completed to verify that warrants are met.
- Table identifying the mitigations required that are the responsibility of the developer and others. A phasing plan is required if mitigations are proposed in phases.
- Figure showing all proposed mitigations that include: intersection lane configurations, lane widths, raised medians, median openings, roadway and intersection dimensions, right-of-way, offset, etc.

Other Applicable Concerns

Where applicable, traffic impact studies may also include an inventory and assessment of existing road geometrics for roads and intersections used by project traffic. Assessment of the design features (sharp curves, sight distance at intersections/driveways, and other features) and incompatible uses (farm equipment, oversized loads, etc.) should be provided where the project may significantly increase

hazards due to these items. Refer to the Section 4.5 of the Guidelines for Determining Significance for Transportation & Traffic.

Where parking demand is high or the existing parking supply is low, traffic impact studies should include an assessment of the project's potential impact to parking availability/capacity. The study must demonstrate compliance with the standards set forth by the County of San Diego Zoning Ordinance (Sections 6750-6799) and the County of San Diego Off-Street Parking Design Manual. Projects will be evaluated case-by-case, and an additional parking capacity analysis may be required. Refer to the Section 4.7 of the Guidelines for Determining Significance for Transportation and Traffic for a detailed discussion of parking.

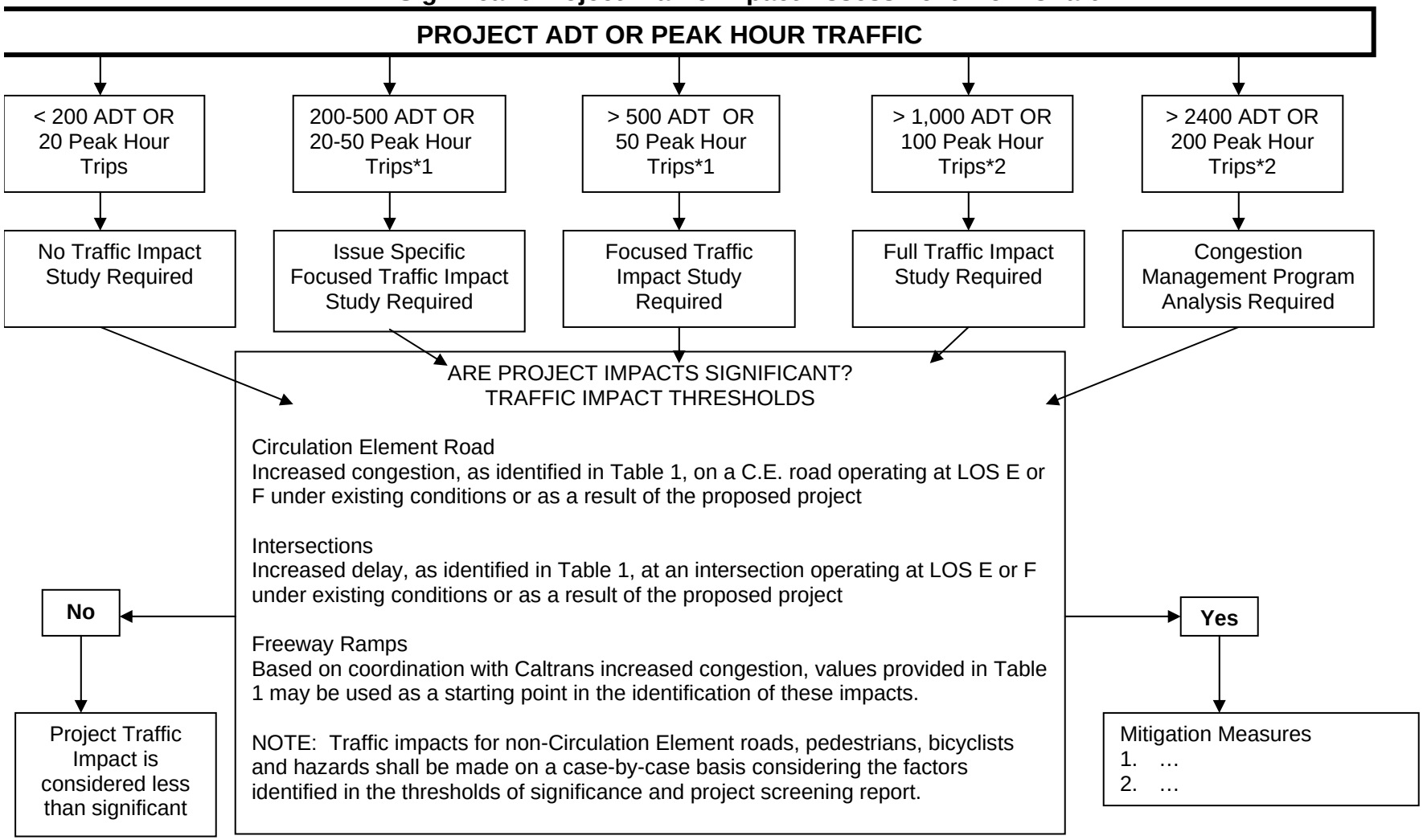
The traffic impact study should also identify adopted policies, plans, and programs supporting alternative transportation modes such as transit. Any conflicts that may result from implementation of the proposed project should be assessed and identified. Project design features such as bus turnouts, bicycle racks, pathways, etc. to help implement the adopted policies, and plans or programs should also be identified. Refer to the Section 4.8 of the Guidelines for Determining Significance for Transportation and Traffic for a detailed discussion of parking

Emergency access should be coordinated with the local fire district, and the Department of Planning and Land Use (DPLU). Although an assessment of the need and adequacy of emergency access is not typically evaluated in a traffic impact study, if it is determined that a secondary access is required, the traffic distribution should include this access if it is open to through traffic. An evaluation of separate access alternatives may be required by DPLU to fully evaluate potential access routes to the proposed project.

Impact Summary Table

An impact summary table should be prepared for all TIS. This table should identify the type of impacts (direct or cumulative), the recommended mitigation measures, and the status of impacts after mitigation (fully mitigated or not).

Figure 1
Significant Project Traffic Impact Assessment Flow Chart



NOTE: For most projects that generate less than 500 ADT, a cumulative traffic analysis will not be required provided the applicant/proposed project fully participates in the County's TIF program. For projects that generate over 500 ADT, a cumulative traffic analysis that assesses cumulative traffic impacts to transportation facilities that will receive 25 or more peak hour trips from the proposed project will be required. For projects that do not fully comply with the County's TIF Program a full, complete and detailed cumulative traffic assessment is required that fully assesses all potential cumulative traffic impacts. The scope of the detailed cumulative traffic assessment will assess roads operating or projected to operate at LOS E or F and that will receive project traffic.

1. Additional criteria for determining whether a Focused Traffic Study will be required: A) Whether or not residential streets will be used to access the project; B) Levels of Service at intersections & road segments in the vicinity of the project; C) Existing road conditions; D) Public Comment.
2. Typically ramp analysis is not required unless it is a CMP project. The need for a ramp analysis is based on the size & proximity of the road system.

[Attachment A]

Ramp Metering Analysis

RAMP METERING ANALYSIS

Ramp metering analysis should be performed for each horizon year scenario in which ramp metering is expected. The following table shows relevant information that should be included in the ramp meter analysis "Summary of Freeway Ramp Metering Impacts."

LOCATION	DEMAND (veh/hr)[1]	METER RATE (veh/hr)[2]	EXCESS DEMAND (veh/hr)[3]	DELAY (min)[4]	QUEUE (feet)[5]

NOTES:

[1] DEMAND is the peak hour demand expected to use the on-ramp.

[2] METER RATE is the peak hour capacity expected to be processed through the ramp meter. This value should be obtained from Caltrans. Contact Carolyn Rumsey at (619) 467-3029.

[3] EXCESS DEMAND = (DEMAND) – (METER RATE) or zero, whichever is greater.

[4] $\text{DELAY} = \dfrac{\text{EXCESS DEMAND}}{\text{METER RATE}} \times 60 \text{ MINUTES/HOUR}$

[5] QUEUE = (EXCESS DEMAND) X 29 feet/vehicle

NOTE: Delay will be less at the beginning of metering. However, since peaks will almost always be more than one hour, delay will be greater after the first hour of metering. (See discussion on next page.)

SUMMARY OF FREEWAY RAMP METERING IMPACTS
(Lengthen as necessary to include all impacted meter locations)

LOCATION(S)	PEAK HOUR	PEAK HOUR DEMAND D	FLOW (METER RATE) F	EXCESS DEMAND E	DELAY (MINUTES)	QUEUE Q (feet)
	AM PM					
	AM PM					
	AM PM					